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SETTLEMENT PROCESSES IN THE MORMON CORE AREA 1847--1890

By

WAYNE L. WAHLQUIST

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TITLE

SETTLEMENT PROCESSES IN THE MORMON CORE AREA 1847-1890

BY

Wayne L. Wahlquist

APPROVED	DATE
Brian W. Blouet	May 27, 1974
Charles J. Kennedy	May 27, 1974
Frederick C. Luebke	May 27, 1974
C. Barron McIntosh	May 27, 1974
Leslie Hewes	May 27, 1974

SUPERVISORY COMMITTEE

GRADUATE COLLEGE UNIVERSITY OF NEBRASKA

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SETTLEMENT PROCESSES

IN THE MORMON CORE AREA

1847-1890

WAYNE L. WAHLQUIST, Ph.D.

University of Nebraska, 1974

Advisor: Brian W. Blouet

The Mormon Core area--the zone of contiguous settlement along the Wasatch Front--attracted the largest percentage of Mormon immigrants coming to Utah and has continued to serve as the cultural, social and economic focus of human activities in the intermountain west. The present study focuses upon the activities and attitudes of the common settler in the Core rather than upon those of Church leaders. Factual data characterizing Mormon settlers and their methods and patterns of settlement were obtained from the U.S. manuscript census schedules, county deed records, private journals, Church membership records and various other historical sources.

Several significant conclusions emerged. (1) The expanison of settlements northward from Salt Lake City into Davis and Weber counties did not occur primarily as directed settlements in accordance with a general colonization scheme, but rather as nondirected settlements founded by individuals acting on their own. In contrast, the first settlements in Utah County were settled by groups, which were sanctioned, if not directed, by the Church hierarchy. Consequently dispersed farmsteads were common in Davis and Weber counties to the north, while villages were the rule in Utah County. (2) A uniform, closely-spaced, linear pattern of settlement soon emerged that persisted throughout the colo-

nization period. (3) A pyramidal structure of settlement size and urban functions developed somewhat akin to Christaller's hypothetical pattern. (4) Salt Lake City remained the primate city with the second city being approximately 1/3 its size. Toward the end of the colonization era, villages and hamlets grew faster in size than did the towns; the growth pattern developed a central curve in a linear graph of rank/size. (5) The number of Mormon immigrants arriving in Utah prior to the completion of the railroad was approximately 61,000 rather than the 80,000 that is generally accepted. (6) Mormon migration, as with most migrations, was selective--the majority of the population being young. Polygamous marriages and the predominance of young adults with a relatively high proportion of females resulted in a high birth rate and a large percentage of children--approximately half of the population was under 15 years of age in 1860 and the mean age was 20. (7) During the decade of the 1850's growth was much more rapid in Utah County than in the northern counties, but this trend was reversed after the completion of the railroad around the north end of the Great Salt Lake in 1869. (8) The northern communities had a much higher percentage of their labor force engaged in agriculture than those in Utah Valley. (9) Mobility was high all along the Front. A survey of names on the census records for three selected communities: Brigham City, Kaysville, and Springville, revealed a very high turnover. Only about one third of the names on the agricultural schedules recur on each succeeding census between 1860 and 1880.

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Other individuals who have been helpful in making information available through personal interviews or private journals or maps in their possession, include: Dee K. Call, Ogden, Utah; William Griffith, Brigham City, Utah; Calvin Sessions, Farmington, Utah; Newell Knight, Sterling Lyon, and Leonard Arrington of Salt Lake City, Utah; Alpheus Harvey and J. Forest Barker of Kaysville, Utah.

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CHAPTER I

STATEMENT OF THE PROBLEM AND REVIEW OF LITERATURE

Introduction

The arrival of Mormon pioneers in the Great Basin in 1847 marked the first large scale Anglo-American settlement in the Intermountain West. From their new base at Salt Lake City, Mormon colonists proceeded to establish a zone of contiguous settlements along the base of the Wasatch Mountains which has been aptly termed the "Mormon Core Area."[1] In addition, discontinuous settlements were established far beyond the Wasatch Oasis in nearly every direction, eventually spilling over into Canada and Mexico.

Most studies to date, which have dealt with Mormon colonization, have emphasized the desire of Mormon leaders to build a kingdom or empire (Fox, 1932; Larsen, 1947; Arrington, 1966; Brightman, 1940; Meinig, 1965). Religious imperialism apparently motivated this attempt to gain control of a vast region before it fell into the hands of non-Mormons (Gentiles). Consequently, despite the centrality of the Core and its key roles as a source region for new colonists and a cultural hearth for the entire Mormon Culture Region, studies of Mormon settlement have focused primarily on the frontier rather than the Core. Perhaps this is because the frontier best reflected the supposed expansionist or imperialistic aims of Mormon leaders, since it provided the best examples of church direction, control, and planning as well

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[1]Donald Meinig, "The Mormon Culture Region," Annals of the Association of American Geographers, Vol. 55 (June, 1965), pp. 191-220.

as individual loyalty, hardship, and heroism. The emphasis has clearly been on group settlement; communalism eclipsed individualism.

Previous studies have focused on the motivation of Mormon leaders rather than the common man. There is a need for a geographical appraisal of the process of settlement in the Core which focuses on the activities and characteristics of the common settler. The Wasatch Oasis became the regional and cultural center of Mormonism and remains so today. Mormon doctrines, institutions and social innovations begun in Nauvoo, Illinois, reached their culmination here and additional innovations were added. The majority of Mormon migrants settled first in the Core before moving to frontier communities. Gentiles also invaded the Core in significant numbers, resulting in a trying period of social conflict and adjustment.

By 1890 many of the distinctive traits which characterized the Mormon colonization era had declined or ceased altogether. No longer were new converts in Europe or the Eastern States encouraged to migrate to "Zion". Organized colonization was greatly reduced and soon thereafter, eliminated entirely. The direct involvement of Church officials in the political and economic affairs of Utah dwindled in comparison to the aggressive role played previously. The Manifesto, halting the practice of plural marriage, was also issued that year. It was the end of an era.

Objective

The major objective of this study is to identify and analyze the processes of settlement in the Mormon Core Area between 1847 and 1890.

The Mormon Core Area is defined as the zone of contiguous settlement along the Wasatch Front extending from Payson in the South to the point where the Bear River cuts through the Wasatch Range in the North. The

eastern boundary is essentially marked by the 5,000 ft. contour along the base of the Wasatch Mountains and the western boundary by the shores of Utah Lake and the Great Salt Lake. In between the lakes, the 5,000 ft. contour along the base of the Oquirrh Range forms the western boundary.

Process, according to James, "refers to a sequence of changes systematically related as in a chain of cause and effect."[1] Broek and Webb define it as "an interplay of forces that causes a series of changes through time."[2] Both of these definitions include the concept of successive events or changes as well as the causative forces that produced them. For the purposes of the present study, process will be defined as the succession of events or developmental stages of phenomena resulting from an energizing or causative force, a definition in harmony with the authorities mentioned above.

Method of Procedure

To analyze settlement processes, the author will focus upon six main topics:

1. The sequence of events in the establishment of the initial settlement in Salt Lake Valley and subsequent expansion in the Core.

This sequence will be traced by examining general histories of Mormon settlement, local community histories, private journals and autobiographies, and the Journal History (a daily record of events copied from private journals, Church documents, newspaper clippings, ward histories, etc., which were compiled by the L.D. S. Church Historian's Office).

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[1]Preston James, "Toward a Further Understanding of Regional Concept," Annals of the A.A.G., Vol. 2 (1952), p. 197.

[2]Jan O. M. Broek and John W. Webb, A Geography of Mankind (New York: McGraw Hill Book Company, 1968), p. 19.

2. The spatial pattern of settlements.

Pattern will be analyzed by a statistical nearest neighbor measurement of settlements in the Core in 1850, to determine whether they were uniformly clustered or randomly spaced. The procedure will be repeated for 1890 to determine what changes occurred during the first four decades of settlement and the physical and cultural determinants which contributed to those patterns.

3. Patterns of growth.

Maps will be constructed depicting the distribution of Core communities at ten year intervals from 1850 to 1890. Communities will be classified by size as identified by U.S. census schedules and changes in the patterns of growth will be identified and analyzed.

4. Population characteristics.

Manuscript census schedules will provide the basic data for analyzing population characteristics. Twelve Core communities will be selected for analysis. For these communities basic characteristics of sex, age, occupation, and nativity will be tabulated and arranged in tables. Generalizations and regional patterns that may become evident will be analyzed to determine contributing cause and effect relationships.

5. Acquisition of land.

Three communities will be selected for a detailed analysis of settlement processes. For these three communities maps will be constructed showing land patents issued by the U.S. Government Land Office. Generalizations and regional patterns concerning the methods of acquiring land will be identified. County Recorder's records will also be examined to determine the characteristics of pre-G.L.O. land tenure systems. Attention will also be given to changes in size of land holdings, as determined by tax records and U.S. manuscript agricultural census schedules.

6. Persistence of rural dwellers.

For the three close-up settlements, the names of farmers listed in the agricultural census schedules will be compared each decade to determine the frequency of recurrence of the same names and the same surnames. From this analysis generalizations regarding persistence of rural dwellers in the Core may become apparent.

Justification

The historical geographer looking at these topics from a spatial point of view and with perhaps a better understanding of man-land relations than other social scientists, can contribute much toward a fuller comprehension of settlement processes. Perhaps a knowledge of the processes of Mormon colonization in the Core can contribute to generalizations that might have application in present underdeveloped nations of the world that are attempting to colonize new lands.

REVIEW OF LITERATURE

Traditional Geographic Studies of Pioneer Settlement

Geographers have long been interested in pioneer settlement. For the first three decades of the 20th Century, the man-land relationship tradition was dominant in American geography. Fredrick Jackson Turner's frontier thesis helped to focus the attention of much of the academic community upon the impact of the frontier. It was natural for geographers to look at the frontier as the ready made laboratory for the study of man's relationship to his environment. Here the complexity of forces so fully developed in mature societies were reduced to their elemental forms. Furthermore, many governments in scattered areas of the world were actively promoting the settlement of new and empty lands. They

were interested in developing satisfactory methods of identifying lands suited for settlement and in encouraging and facilitating pioneers in developing new lands. It was a ready-made opportunity for applied geography. If geographers were to be involved in the frontiers of their own science, it was essential that they examine frontier settlements.

The doyen of settlement geography in the U.S. was Isaiah Bowman. In 1926 he called for a new "science of settlement."[1] He maintained that it would be extremely useful to put upon world maps of pioneer belts numbers as used in economics. These would indicate such items as the mileage of railroads, telegraph lines, dirt roads, paved roads, number of newspapers, postal facilities and other facilities. Bowman thought:

> We ought to find out why pioneer conditions are tolerated as long as they are. What conditions set a natural economic limit to man's space as he moves into pioneer belts? What is the ratio between the power that he can exercise in such communities and the power that he exercised in settled communities? Can we establish index numbers that will show the measure of his power in the pioneer belts?. . .What shifting of population might occur in the frontier if man were fully aware of the possibilities of his power when applied to pioneering conditions in given areas?[2]

These and other questions would form the basis for a new area of study that would cut across the boundaries of many traditional academic disciplines.

Bowman's article intensified the interest of geographers in pioneer settlement and he continued to make leading contributions. In Canada an interdisciplinary Canadian Pioneer Problems Committee was formed at his urging to study in depth the problems of pioneer settlement in the

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[1]Isaiah Bowman, "The Scientific Study of Settlement," Geographical Review, Vol. 16 (October, 1926), pp. 647-653.

[2]Ibid., p. 651.

Canadian Prairies. He was successful in enlisting the support of the American Geographical Society, the National Research Council, and the Social Science Research Council in providing research funds for this project. In addition, the American Geographical Society highlighted this new interest in settlement geography with its special publications numbers 13 and 14 entitled The Pioneer Fringe, by Isaiah Bowman (1931) and Pioneer Settlement edited by W.L.G. Joerg (1932). These two volumes, together with the eight volumes produced by the Canadian Pioneer Problems Committee entitled Canadian Frontiers of Settlement edited by W.A. Mackintosh and W.L.G. Joerg (1934-1940), marked a high point in settlement literature. These were high quality descriptive studies that represented the aggregate contributions of reputed scholars from several academic disciplines and from several countries. Perhaps no frontier has been examined as thoroughly as that of the Canadian Prairies. The physical environment, political organization, economic activities, transportation, social systems and history were all considered in identifying and analyzing characteristics of this frontier society.

The interest of Canadian and American geographers in settlement was not restricted to their own frontiers in North America. Mark Jefferson wrote an excellent descriptive and interpretive analysis of settlement on the Argentine Pampa (1926). Griffeth Taylor, a British geographer who spent much of his professional career in the United States and Canada, did a series of settlement studies including: "Settlement of Tropical Australia" (1919), "Frontiers of Settlement in Australia" (1926), "Settlement of Zones in the Sierra Nevada de Santa Marta, Colombia" (1931), and "Settlement Zones of Eastern Algeria" (1939). Owen Latimore looked at Chinese colonization in Manchuria (1932); Robert B. Hall studied rural settlement forms in Japan (1931); Albert

Payson Usher reviewed the history of population and settlement in Eurasia (1930); and Preston James examined expanding settlement in Brazil (1940).

In addition to contemporary frontiers, historical geographers turned their attention to those of the past. Scofield examined the origin of New England settlements (1938), Trewartha investigated the morphology of settlements in Colonial America (1946), and Lemon traced the development of dispersed farmsteads and urban centers in southeastern Pennsylvania (1972). However, pioneer settlement was often considered only as one stage of development in the sequence of changes within a region. Whittlesey applied the term "sequent occupance" to this approach.[1] In his brief but influential article, Whittlesey proposed a new method of approach to historical geographers who were looking at settlement. "Sequent occupance" was a term and a method of study which recognized that human occupance of an area carried within itself the seeds of its own transformation. Areas or regions of human settlement went through many stages in their evolution just as plant associations did. In order to really understand any particular landscape at a particular time in history, it was essential to trace the sequence of stages of human occupance preceding it. Normal sequences are rare since the course of human history never runs smoothly. The vicissitudes of economic, political and technical upheaval combined with natural hazards prevent normal sequences from occurring.

Whittlesey's "sequent occupance" theme seemed to combine Fenneman's focus on regions with Barrow's human ecology and Sauer's interest in the

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[1]Derwent Whittlesey, "Sequent Occupance," Annals of the A.A.G., Vol. 19 (September, 1929), pp. 162-165.

natural and cultural landscape. In contrast to Bowman's concern with processes of pioneer settlement, Whittlesey looked at pioneer settlement as only one stage in the sequence of man's occupance of a region. Two noted examples of this approach were James (1929) and Broek (1932).

Ethnic group settlement has been the object of much geographic inquiry. Examples include Warkentin (1959), Stewart (1967), Nelson (1970), and Eidt (1968). Warkentin traced the development and decline of the agricultural villages established by some 7,000 Mennonites in Southern Manitoba beginning in 1874. Many forces, some external and some internal, led to the disintegration of many of the villages and to the migration of many of these colonists to other areas. Yet the imprint of the original village colonization was still evident in several landscape features, including field pattern, location of shade trees, and architectural styles.[1] Stewart studied Japanese colonization in Paraguay, which offered a particularly apt object of inquiry for a study of pioneer settlement. World War II virtually cut off contact with the homeland, leaving these pioneers isolated from their home culture. The adaptation of the Japanese settlers to new surroundings and the ensuing cultural landscape were the objects of this perceptive study of settlement processes. The author's basic premise was that the landscape provides a readable and reliable record of specific cultural elements and processes that invariably participate in the complex relationship between man and the land.[2] Nelson investigated the geographic significance of six colony settlements in Henry County, Illinois in the first half of the 19th century.

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[1]John Warkentin, "Mennonite Agricultural Settlements of Southern Manitoba," Geographical Review, Vol. 40 (1959), pp. 342-368.

[2]Norman R. Stewart, Japanese Colonization in Eastern Paraguay (Washington D.C.: Office of Naval Research) Report no. 30, 1967.

He (1) examined the characteristics, methods and objectives of each colony, (2) identified the temporary and lasting occupance patterns and other place to place differences fostered by the colonies and, (3) studied the role the colonies played in over-all pioneer settlement and development of the county. The colony settlements were located mostly in the prairie and prairie-woodland border areas of the state beyond the zone of continuous frontier settlement, since these were the only areas left where colonists could obtain large enough tracts of contiguous land. Consequently, they had difficulty in obtaining adequate access to markets in this pre-railroad era. The lack of access to markets combined with over-speculation and the depression of 1837 led to modification of original plans and outright failure of two of the colonies. Colony settlement gradually gave away to individual settlement.[1] Eidt examined pioneering which is still occurring in South America. He recounts the recent trend in Japanese colonization and identifies 37 post World War II colonies in Latin America. Modern colonization, he concludes, depends largely on five factors: location of the colony, settlement form, choice of settlers, formalized system of resource utilization, and methods of land titling and inheritance.[2]

Theoretical Studies

Most modern geographic studies of settlement have been highly influenced by the quantitative revolution in the science of geography.

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[1]R.E. Nelson, "The Role of Colonies in the Pioneer Settlement of Henry County, Illinois" (unpublished Ph.D. dissertation, University of Nebraska, 1970).

[2]Robert C. Eidt, "Japanese Agricultural Colonization: A New Attempt at Land Opening in Argentina," Economic Geography Vol. 44 (January, 1968), pp. 1-20.

Traditional studies have always been interested in spatial patterns that helped to identify and interpret or explain morphology and process, but their emphasis has been on those features which were unique rather than general. This ideographic approach has led to numerous descriptive studies but few general theories. Generalizations, when they did occur, were derived inductively i.e. they proceeded from the specific to the general. Bowman expressed the view that when all of the pioneering experiences of the world are pooled, some generalizations or principles will emerge that apply to all pioneering.[1]

Some scholars have become interested in the application of general theory to studies of settlement. The sequence of stages in the development of pioneer areas offers an excellent medium for testing spatial theory. They are not interested in the uniqueness of each settlement but rather the broad forces that are acting on all pioneer settlements to produce similarity in spatial distribution. By using statistical techniques, they hope to measure in quantitative terms the "goodness of fit" of the actual pattern to the theoretical one. Their approach is deductive rather than inductive and a variety of techniques have been developed to aid in analysis of distribution patterns.

Christaller's well known analysis of central places in southern Germany (1933) was the launching pad for theoretical studies of settlement. Although this was not the first study to identify hierarchical patterns of settlement (Galpin and Platt identified a hierarchy of central places in

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[1]Isaiah Bowman, The Pioneer Fringe (New York: American Geographical Society, Special Publication No. 13, 1931), p. 9.

Wisconsin in 1915 and 1928 respectively),[1] it did represent a departure from the mainstream of settlement research. Christaller fostered a quantitative and deductive approach that has led to numerous mathematical and descriptive modals which have been used to explain and/or predict actual settlement patterns. Perhaps the most useful summary and analysis of settlement theory is Michael Chrisholm's Rural Settlement and Land Use?[2] A few examples of the theoretical approach to settlement geography include: Brush (1953), Bylund (1960), Morrill (1963), Curry (1964), Hudson (1969 and 1973), Whebell (1969), and Blouet (1972).

The greatest part of the studies referred to so far have been theoretical in nature or have been concerned with the process of settlement in the broadest sense of that term. There have been relatively few studies which have looked at the evolution of settlement systems through time and asked the question originally posed by Christaller, "what factors determine the size and spacing of settlements" in changing social and economic circumstances.[3] One of the major purposes of the present study is to examine the changing size, spacing, and functional provisions of settlements within the Mormon Core Area.

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[1]C. J. Galpin, Rural Life (New York, 1923) cited in E. A. J. Johnson, The Organization of Space in Developing Countries (Cambridge: Harvard University Press, 1970), pp. 138-139, and Robert S. Plant, "A Detail of Regional Geography: Ellison Bay Community as an Industrial Organism," Annals of the A.A.G., Vol. 28 (1928), pp. 81-126.

[2]Michael Chisholm, Rural Settlement and Land Use (Chicago: Aldine Publishing Company, 1970), p. 183.

[3]Some exceptions to this generalization include: Wayne K. D. Davies, "Toward an Integrated Study of Central Places," in Harold Carter and W. K. D. Davies, eds., Urban Essays: Studies in the Geography of Wales (London: Longman, 1970), pp. 193-227; Richard W. Helbrock, "Nodal Settlement Evolution in the Willamette Valley of Oregon, 1850-1900," (unpublished Ph.D. dissertation, University of Pittsburgh, 1973); and John A. Laska Jr., "The Development of the Pattern of Retail Trade Centers in a Selected Area of Southwestern Iowa," (unpublished M.A. thesis, University of Chicago, 1958)--more information on this area is included in B. J. L. Berry, Geography of Market Centers (Englewood Cliffs: Prentice Hall, Inc., 1967), pp. 4-25.

Mormon Settlement Studies

Mormon settlement has attracted the attention of scholars from various fields, including history, sociology and geography. Historians, particularly, have been interested in the establishment of a "Mormon Empire" in the Great Basin. This is due perhaps partly because of the uniqueness and controversial nature of Mormon society, partly because Mormons dominated such a large region of western America, and partly because of the Mormon penchant for keeping journals providing an amazing amount of primary source material. A number of general works are useful background reading for anyone looking at Mormon settlement.[1]

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[1]The following list is intended to be indicative of the types of studies available rather than exhaustive, although an effort has been made to include the major contributions. Leonard J. Arrington, Great Basin Kingdom, An Economic History of the Latter-day Saints 1830-1890 (Lincoln: University of Nebraska Press, 1966) is an exhaustive economic history of Mormon settlement in the Great Basin. As one would expect from an economic historian, he traces the close relationship of economic development to the total social, religious, and political conditions of the time. Economic determinism, though never labeled as such, is a recurring theme throughout the book. Many of the political, social and even religious programs of the Church, he interprets as responses to economic forces. Of particular interest was the retrenchment program developed in response to the coming of the railroad, to shore up the influence and control of the Church against the anticipated intrusion of Gentile influence. Arrington's 100 pages of notes and bibliography serve as an excellent guide to anyone interested in doing further research. Nels Anderson, Desert Saints, The Mormon Frontier in Utah (Chicago: University of Chicago Press, 1942) written by a prominent sociologist, is considered by some historians to be the best single volume on Mormon history. It gives a very general coverage, but offers penetrating insights into the workings of Mormon society. Hubert Howe Bancroft, History of Utah (San Francisco: The History Company, 1890) is just one in a long series of historical volumes on American history to come from Bancroft's prolific pen. Published in 1890, it was a contemporary history, written when anti-Mormon sentiment was strong. As such, it is remarkably objective. His primary sources were largely manuscripts provided by the L.D.S. Church, but he balances these with statements of federal officials and anti-Mormon writers where facts are disputed. He gives his own interpretation of the significance of polygamy and other controversial issues in the political and economic history of Utah. It is doubtful that any other history has been quoted from by subsequent writers to the extent that this one has. Leland H. Creer, The Founding of an Empire: The Exploration, and Colonization of Utah, 1847-1856 (Salt Lake City: Bookcraft, 1947) is a well

Although various aspects of Mormon settlement have been the object of numerous M.A. theses and Ph.D. dissertations, the subject has not

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written account of the Mormon exodus from Nauvoo, Illinois to the Great Basin and the selection of the Great Basin as their place of refuge. It also covers the early period of frontier colonization. It has frequently been used as a text in Utah history courses. Klaus J. Hansen, Quest for Empire (Michigan State University Press, 1967) is the most recent and most complete study of the political Kingdom of God and the Council of Fifty in Mormon history. Because of the persecutions from an already antagonistic "Gentile" world, the organization of the political Kingdom of God and its ruling body--the Council of Fifty were shrouded in secrecy. The general church membership was ignorant of its functions or even its existence. Dr. Hansen has meticulously pieced together from widely scattered primary sources a remarkable history of this little known body. His is an interpretative history but it is well documented from both Mormon and anti-Mormon sources. Hansen sees this organization as the real controlling power in political and other temporal affairs of the Mormon empire. Particularly enlightening is the author's discussion of the planning and negotiations that took place prior to and in preparation for the exodus of the Mormons from Illinois. Texas, California, Oregon and the Great Basin were all carefully considered as destinations for the Mormon migration. In the case of Texas, negotiations took place for the establishment of a Mormon buffer state between the Republic of Texas and Mexico, and a diplomat was dispatched to France to determine her attitude toward such a proposal. According to Hansen, it was the existence of this shadow government in Utah, that really lay at the root of the Mormon-Gentile conflict that lasted for half a century. Polygamy was the rallying point for anti-Mormon sentiment and was thus used as an effective weapon against this secret political Kingdom controlled by the Mormon hierarchy. This book will probably lead to a reinterpretation of much that has been written about Mormon history. Milton R. Hunter, Brigham Young the Colonizer (Salt Lake City: Deseret News Press, 1940) is the best history available of the over-all colonizing activity directed by Brigham Young although the Mormon bias of the author shows through consistently in this rather laudatory account. It includes accounts of the early settlement of virtually all of the significant valleys in the Great Basin where Mormons settled. Individual settlements are covered very lightly but one can find a brief account of the individuals involved and the dates when most settlements were founded. The author recognized three distinct periods of colonization. The first lasted from 1847-1867, during which time 96 settlements were founded. The second period was from 1858-1867, when 135 colonies were founded, and the third lasted from 1869-1877, when 127 colonies were founded. Colonization continued after Brigham Young's death but these colonies were beyond the scope of the study. A compiled list of 358 colonies is included at the end of the book with their dates of settlement along with a rather crude small scale map showing their approximate locations. Although a discussion of land policies is included, there is no attempt to measure, classify or map agricultural land utilized in any of the colonies. The methods of distributing land and the problems of obtaining title are treated only in a general way. The

been investigated as thoroughly as bibliographies indicate. There is a strong tendency among graduate researchers to get side-tracked from the

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bibliography is a useful tool for students interested in further research since it includes a description and guide to primary sources available in the Church Historian's Office in Salt Lake City and in the Bancroft Library in California. Gustive O. Larsen, Prelude to the Kingdom (Francestown, New Hampshire: Marshall Jones Company, 1947) is a study of the Mormon cooperative system of enterprise in establishing themselves in the Great Basin. It is particularly good in its coverage of the Perpetual Emigrating Fund and Mormon emigration. The author, for many years a prominent history professor at Brigham Young University, traces this cooperative spirit of the colonial era to its present manifestation in the Mormon welfare system. William Mulder, and A. Russell Mortensen, Among the Mormons: Historic Accounts by Contemporary Observers (New York: Knopf, 1958) is a collection of statements from contemporary observers which have been chosen skillfully to give the reader a balanced glimpse into the flavor and mood of early Mormon history. Each selection is prefaced with a sketch of the conditions that existed at the time the observer witnessed the Mormon scene and gives a thumbnail biographic sketch of the observer. The selections chosen represent general impressions of Mormons and the Mormon settlements rather than descriptions of individual colonies. Lowrey Nelson, The Mormon Village: A Pattern and Technique of Land Settlement (Salt Lake City: U.of U.Press, 1952) is a well written sociological analysis of Mormon villages and rural society in Utah. The author did his M.A. thesis in 1923 and his Ph.D. dissertation in 1929 at the University of Wisconsin on various aspects of Mormon villages. He continued publishing on this subject in the 1930's and in 1950 revisited two of the villages he first studied in 1923. This quarter century of interest in Mormon villages culminated in this book,which Meinig refers to as the definitive study on the Mormon Village (Meinig, 1965, p. 192). Spatial relations are not ignored but the prime focus is on social behavior. It is no doubt a penetrating look at the social structure of society in the Mormon village in the 20th century, and it is useful in measuring the impact of the depression of the 30's and the World War II period on rural America. Yet, it assumes a uniformity in town plats that did not exist (see review of Baum p. 25) and one wonders if there was not more cultural diversity from village to village than Nelson recognized. It appears that Nelson's study, while valuable, is far from being the definitive work. It has helped to perpetuate some misconceptions that need to be tested by careful field work. B.H. Roberts, A Comprehensive History of the Church (Salt Lake City: Deseret News Press, 1930) 6 vols., is an excellent, detailed account of events compiled from Church sources. The author was one of the general authorities of the Church of Jesus Christ of Latter-day Saints as well as the Church Historian. He was a prominent spokesman for the Church in both civic and religious affairs, and was referred to as the "blacksmith orator." As one would expect, the Mormon bias of the author is evident, but in spite of this, it is a remarkably complete and objective record and contains much information that is not found elsewhere.

specific topics, as indicated by the titles of their research projects, to a general history of Mormonism in Utah. Consequently, much of the research is repetitive. The Mormon story is frequently retold with some new facts and/or interpretation but contributing comparatively little that is new to the over-all analysis of Mormon settlement. There are, of course, exceptions to this general rule. Examples of historians who have examined some aspects of Mormon settlement include Dastrup (1931), Fox (1937), Ricks (1920, 1930), and Peterson (1967).

In her generalized history of Mormon colonization, Dastrup emphasized the organization and cooperative spirit of Mormon colonies as opposed to the individualism characteristic of most pioneer settlements. Some information about individual settlements is included, but usually only a paragraph or two. The author assumes a great deal of uniformity in Mormon colonization that may not have existed. She states, for example, that outside of new settlements, land was surveyed into five acre lots, then other irrigated land was distributed according to the needs of the population. Blocks of eight lots were uniform with each lot containing about one and a quarter acres each.[1] Recent studies have shown that such uniformity did not exist.

Fox does not hold as close to his topic, the Mormon Land System, as one might wish, but nevertheless, traces the Mormon system of dividing up the land from its origins in Ohio, Missouri, and Illinois, under the direction of Joseph Smith, to the distribution and utilization of land in Utah under the direction of Brigham Young and later Church leaders. He points out that although the failure of the federal government to

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[1] L. Dastrup, "Mormon Colonization, a Type in the Westward Movement" (unpublished M.A. thesis, Brigham Young University, 1931).

extend the federal land laws to the territory left land titles insecure, it gave Mormon leaders the opportunity to distribute land in accordance with their own ideas. This included large grants of pasture and timber land to prominent individuals to be held in trust for common usage, and division of irrigated land into small private plots of 5-20 acres in size. When the land offices were opened in Utah in 1869, the land was entered in quarter sections as homesteads by "trustees," who subsequently deeded the parcels of land to their rightful owners. There is no attempt to measure the percentage of land obtained by homesteads vs cash entries nor the extent of "trustee" filing.[1]

Ricks in his brief, but well written, M.A. thesis (1920) traces the legal history of land distribution in Utah. He reviews the legislative acts of the Territory of Utah and of the U.S. Congress that affected land distribution in Utah, including the treaties with various Indian tribes that added land to the public domain in Utah. This study will serve as a useful guide to legislative action for anyone interested in the disposal of public land in Utah.[2] Ricks' doctoral dissertation was completed at the University of Chicago in 1930 under the direction of Andrew C. McLaughlin, William E. Dodd and Avery O. Craven. Dr. Ricks developed professional friendships with the well-known frontier and western historians--Fredrick Jackson Turner and Herbert E. Bolton. His subsequent distinguished teaching career at Utah State University has

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[1]F. Y. Fox, "The Mormon Land System, A Study of the Settlement and Utilization of Land Under Direction of the Mormon Church" (unpublished Ph.D. dissertation, University of Oklahoma, 1937).

[2]J. E. Ricks, "The Early Land System of Utah, 1847-1870" (unpublished M.A. thesis, University of Chicago, 1920).

brought him much recognition as an authority on this topic.

His dissertation is a general history of Mormon colonization compiled from primary sources with a focus on form and method. Ricks explores the procedures followed in establishing colonies and describes their developmental stages by examining selected colonies in detail--Salt Lake City being the first settlement examined at length. He discussed the governmental structure, the method of distributing the land, the construction of roads--canals--and defense installations, the development of industry, and population growth. There is a very brief history of settlement elsewhere in the Core but most attention is given to settlements in southern Utah, Arizona, California, and Cache Valley, Utah.

Ricks emphasized the planning and control Brigham Young exerted in these colonization efforts. The saints faithfully responded to Young's "call" to settle new regions and thus helped to fulfill his dreams of empire. Although Ricks is not as laudatory as Hunter, his conception of Young as the great planner and manipulator is much the same. Religious imperialism was the motivational drive behind Mormon colonization efforts. He does mention that some people were attracted to new settlements because of available land in contrast to the over-crowding that existed in the Salt Lake vicinity. The possibility of this as a major motivational force for colonization, however, is not explored. Ricks definitely considered it incidental to Mormon expansionism.

Ricks was a friend of Fredrick Jackson Turner, but his well written history of Mormon colonization is the very antithesis of the Turner thesis. He describes how these carefully planned, directed, cooperative ventures in colonization succeeded in the face of isolation and a harsh physical environment. Rather than rugged individualism, cooperation was the key to survival. Instead of independent ideas and innovation, the Mormon frontier

produced deference to authority and uniformity in culture. Urbanization occurred simultaneously with agricultural development, not as the end product of a multi-stage sequential process.[1]

It is hoped that this current study may indirectly shed more light on the role individualism played on the Mormon frontier.

Peterson's 519 page Ph.D. dissertation is an exhaustive, well written and penetrating account of Mormon colonization on the Little Colorado. The author, a historian, and current editor of Western Historical Quarterly, has done a thorough job of sifting through diaries, journals, letters, Church records, and secondary sources in producing this penetrating analysis. Particularly illuminating is his discussion of the role Church institutions, i.e. mission calls, united order, polygamy, cooperative mercantile institutions, etc., played in Mormon expansions in Arizona. While the emphasis of his study is on Church directed and supervised settlement, he does not ignore individualism. In fact he identifies individualism as a potent force, sometimes latent, sometimes dominant, in shaping and/or altering the internal nature and characteristics of these settlements. This is an invaluable source for any study dealing with Mormon settlement, and is now available in book form published by the University of Arizona Press.[2]

Although geographers have not concerned themselves with the "Mormon Region" tc the extent that other social scientists have, several Ph.D. dissertations and M.A. theses have been concerned with the subject. White

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[1]J. E. Ricks, Forms and Methods of Early Mormon Settlement in Utah and Surrounding Regions, 1847-1877 (Logan, Utah: Utah State University Press, Vol. 11, January, 1964).

[2]Charles S. Peterson, Take Up Your Mission: Mormon Colonization Along the Little Colorado 1870-1900 (Tucson, Arizona: University of Arizona Press, 1973).

(1925), Spencer (1936), Coffman (1944), Miller (1951), Chestnutwood (1950), Baum (1967, Francaviglia (1970), and Jackson (1971) have dealt with Mormon settlement to some degree and their investigations appeared to have some application to the author"s own interest in settlement process.

White"s Ph.D. dissertation was a perceptive regional study of the characteristics, accomplishments, and problems of agriculture in the Salt Lake Oasis. Of particular interest is the discussion of the development of wet lands in the older lowland farms after irrigation was brought to the higher bench lands. In at least one case, the village itself was moved several miles to higher, better drained, land. The author discusses at length the problems of adjusting 20th century agricultural methods to the small farms and agricultural villages that are a legacy of the pioneer era and also examines the types of crops, marketing procedures, and methods of production that were current when the study was done. It would be interesting to see a comparative study done today noting the changes that have taken place since 1926.[1]

As one would expect from a student of Carl Sauer in the early 1930's, Spencer's study emphasized the natural and cultural landscape. The first half of the dissertation is concerned with background material. It includes a thorough discussion of the physical setting, i.e., basic geology, physiography, hydrology, climate and vegetation. This section on the natural landscape comprises approximately one third or more of the total dissertation. It includes a number of fold out maps showing various physical features. These appear to be completely original maps drawn

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[1]C. L. White, "The Agricultural Geography of Salt Lake Oasis," Journal of the Scientific Laboratories of Dennison University, Vol. 21 (1925-1926), pp. 117-283.

without the benefit of good base maps and without much concern for cartographic technique.

One chapter is also devoted to the Indian landscape. However, since there were few Indians, their impact on the landscape was slight. Indian history, economy and social characteristics are covered in a general way. Prior to the coming of the Mormons there had already been some acculturation since the Indians were raising wheat, and a few of them knew some Spanish.

The background chapter of Mormon colonization traces pioneer history and describes beliefs and practices that led to colonization in the Middle Virgin River country. Most of the information is available in greater detail in other sources which have already been reviewed.

The last half of the dissertation is devoted to Mormon settlement along the Middle Virgin River Valley and its tributaries. Much attention is given to the morphology of settlements, i.e. town plots, house types, roads, crops, ownership patterns, etc. These were the items that comprised the cultural landscape.

The Mormon system of land division and the adjustments made to the government rectangular land survey are discussed in a general way. Patterns of claimed land are shown for a few sample villages, but there is no attempt to map in detail the actual farmed land. Spencer states that the common practice of gaining legal title to the land was to have "trustees" file for homestead entries in behalf of several owners of small acreages. He in turn deeded the land to its rightful owner after receiving the patent for it. Although this system has been mentioned by several writers, no one (including Spencer) has ever attempted to determine how common this practice was. It would be interesting to find out what proportion of the land and what proportion of land titles were granted under this system.

Spencer also looked at economic conditions and trends as they have affected growth and decline of population. He concludes that with the opening of national highways, and the entry of Utah's Dixie into the full force of economic competition with other areas, that disruption of the Church oriented society took place. The Church was losing its control, though not its influence, in Dixie.[1]

Coffman's dissertation is typical of the good quality regional studies being done in geography in the 1930's and 1940's in this country. It examines the physical setting, i.e. basic physiography, soils, climate, vegetation, the cultural setting, and economic development. Some attention is given to settlement and the development of irrigation practices, but these topics are treated in a general way and are peripheral to the main focus of the study, which was the current geography of the valley. The author points out that the first settlements were near the streams, and that the general procedure was to first build a fort with cottonwood logs where the earliest settlers lived while the fields were brought under cultivation, and a town was plotted and surveyed nearby. Then when each settler received his town allotment he proceeded to build his individual home.

Irrigation canals were small at first and included only land close to the streams which could be easily irrigated. Then as the population increased additional canals were built, taking their water out farther up stream so that they could irrigate higher and higher ground. This resulted in a series of parallel canals owned by different companies.

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[1] J. Spencer, "The Middle Virgin River Valley, Utah: A Study in Culture Growth and Change" (unpublished Ph.D. dissertation, University of California, Berkeley, 1936).

Coffman does not attempt to map the location of these canals nor the land that was brought under cultivation. This is not a study focused on a particular problem; rather, it is a broad descriptive analysis of the physcial and cultural elements that comprised the geography of Utah Valley in 1940.[1]

Miller's high quality two volume dissertation is a major contribution to the identification and description of the agricultural problems, limitations, practices, and potentials of Cache Valley. It is geared to contemporary culture, but is quite thorough in giving the historical background of such items as irrigation and drainage. A map of irrigation canals in 1869 is included as well as a table of potential irrigation projects that could be useful in the future.

Of particular interest is the chapter on the history of agricultural settlement. It is of necessity a generalized account, but does record the development of agriculture and establishment of agricultural communities. Agriculture went through several phases of development. Grasshopper plagues, freezing winters, and Indian raids took heavy tolls on the crops and livestock in the early period.

One of the main contributions of the study is the numerous distribution maps of agricultural crops and livestock. Miller examines the development and potentials of the major crops that were then grown and examines the potential for a few crops that were as yet insignificant. He felt that Cache Valley was a mature agriculture region that had approached its maximum production except for new potential irrigation districts.[2]

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[1]W.E. Coffman, "The Geography of the Utah Valley Crescent" (unpublished Ph.D. dissertation, Ohio State University, 1944).

[2]E.E. Miller, "Agricultural Geography of Cache Valley, Utah-Idaho" (unpublished Ph.D. dissertation, University of Washington, 1951).

Chestnutwood looked at the historical development of Brigham City, Utah as an urban community. His is a descriptive study and much of it consists of a narrative of early Brigham City history. He also concerned himself with land use and urban functions of the contemporary city. He emphasized the dominant role early Church leaders, notably Lorenzo Snow, played in the spatial organizational pattern and development of the community.[1]

Baum did a brief analysis of one hundred Mormon settlements to determine what pattern of land occupancy was used; what physical characteristics determined site selection for towns; what typesof surveys were used; and what relationships existed between forts and "lay-out patterns." Because of the breadth of the study it is somewhat lacking in depth. He was looking for general patterns rather than a thorough understanding of particular settlements. Consequently, his coverage is somewhat superficial, resulting in several errors. One table listing the settlements included in the study states whether the settlement had a fort or protective wall around the village and indicates the kind of construction used in building the wall or fort. Several settlements in the Mormon Core Area are shown as not having either a wall or fort, when in fact they did. Those, which this reviewer is aware of, include the towns of Draper, West Jordan, North Ogden, Uintah and Lynne, which was earlier called Bingham's Fort. Furthermore, the table does not indicate when the settlements were founded. One would conclude from looking at the table that protective walls or forts were the exception rather than the rule. This is certainly not true for the early settlements. Most settlements established before 1856 had either a wall around the village or a fort whereas settlements established after

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[1]C. M. Chestnutwood, "An Historical Approach to the Urban Geography of Brigham City" (unpublished M.A. thesis, University of Utah, 1950).

1870 rarely had them unless they had penetrated deep into Indian country.

Each of the settlement sites is classified as an alluvial fan, delta, lake plain or river bottom. Baum concludes that 60 of the 100 settlements were located on alluvial fans, 24 on deltas and only 16 on river bottoms or lake plains. The fans and deltas apparently were preferred by Mormon settlers because of better drainage and freedom from floods. Lake plains were often marshy and alkaline. The problem with such a classification lies in the difficulty of accurately identifying each landform type. Ogden, for example, is listed as a delta settlement, when in reality it was built on the flood plain where the Ogden and Weber rivers have cut down through the delta. Uintah is also listed as a delta settlement, yet it was built on the Weber flood plain approximately three hundred feet below the delta surface. Since, along the Wasatch Oasis, deltas often grade imperceptably into alluvial fans and river flood plains grade imperceptably into lake plains, generalizations based on such a classification, without careful checking in the field, are of doubtful validity.

One of the valuable items in the study is the analysis of town plats. Again the information is compiled into tables showing the size of blocks, width of streets, number of lots in a block, size of lots, and shape of the blocks. Assuming that the tables are accurate, the one hundred settlements exhibit a surprising variety of these characteristics. Lot size varied from .5 to 2.0 acres; the number of lots in a block varied from 4 to 14; and streets varied in width from 50 to 132.99 feet. If, as has often been stated, all Mormon settlements were patterned after Salt Lake City, this table indicates that those early surveyors were not very adept at following the plan.[1]

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[1]J. H. Baum, "Geographical Characteristics of Early Mormon Settlement" (unpublished Masters thesis, Brigham Young University, 1967).

Francaviglia's dissertation is a very interesting and provocative study of the Mormon landscape. Francaviglia points out that geographers as a rule have had their eyes closed to the cultural landscape. He quotes George Perkins Marsh, "sight is faculty; seeing an art." With this in mind, he spent six months in the field investigating Mormon and non-Mormon settlements in the intermountain region, covering approximately 13,000 miles. His goal was to determine: (1) if there really was a distinctive Mormon landscape; (2) how did the elements of the landscape vary in time and space; (3) what were the primary factors creating the landscape; (4) how have writers and artists portrayed that landscape; and (5) are the Mormons themselves aware of any difference between Mormon and non-Mormon landscapes.

The author chose several landscape features to be used as indices for measuring the Mormon landscape which included the following: wide streets (over 65 feet), roadside irrigation ditches, N.S.E.W.grid pattern towns, trees lining the streets, open fields surrounding the town, cattle and sheep on the same pasture, lombardy poplars in the landscape, "inside-out" granaries (the wall boards are on the inside of the stud wall), hay derricks, central-hall plan houses, high percentage of brick houses, high percentage of red and light brown houses, and Mormon fences (unpainted fence composed of upright boards attached to crosspoles). According to him, any or all of these features comprised an important part of the visual landscape and form a measure of the extent of Mormon influence in the village.

Forty-two towns or villages within this region were selected to measure these visual characteristics. Maps were constructed for each of the features listed above. Those settlements where that particular characteristic was present are shown as solid circles, while those with-

out that characteristic are shown as clear circles. The Mormon settlements consistently appear as solid circles, whereas the non-Mormon settlements quite consistently appear as clear circles. The problem with this series of maps is that no indication is given of how frequent the characteristic in question was in those villages shown as solid circles. Does it mean that these items were common or merely present? If the circle was clear, does it mean that the item in question was totally absent or merely less common than in those villages shown as solid circles? The reader is left to speculate. On the map of population characteristics, twenty-six settlements are shown as Mormon, five as part-Mormon, and eleven as non-Mormon or Gentile. There is nothing to indicate what percentage of the total population constitutes a Mormon or Gentile town, either on the map or in the accompanying script. Since it is highly unlikely that any of these settlements are 100% Mormon or 100% non-Mormon, the reader is left wondering what constitutes a Mormon, part-Mormon, or non-Mormon town. Without more explicit information, the whole series of maps is of doubtful value.

Nevertheless, Francaviglia identifies three zones within the "Mormon Culture Region" with varying intensity of these visual characteristics of the Mormon landscape. The "nucleus" comprises the zone of settlements stretching from Cache Valley in the north to St. George in the south, and corresponds quite closely with Meinig's map of "Contiguous Colonizations." Many of the visual features mentioned above are present in this region. The "Orb" surrounds the "nucleus" and is visually less Mormon than the "nucleus," but still has several of the visual features present. The "Fringe" surrounds the "Orb" and extends fingerlike into Idaho, Oregon, Nevada, Arizona, Colorado and New Mexico. It has a few of the Mormon visual characteristics such as a hay derrick or unpainted barn, but they

are not common features.

Francaviglia traces the origin of the above characteristics and their process of diffusion, as well as some of the changes through time. He restates what many others have said, that Brigham Young directed, instructed and controlled the population. Consequently, if he told them to build solid houses, it became a matter of eternal salvation to build with rock or brick, which accounts for the high number of brick homes in Mormon settlements. The present reviewer is highly skeptical of such a conclusion. He has found no evidence in diaries of early pioneers that indicates people chose their building material because of any religious compulsion or even direct instruction or suggestion of Brigham Young. For the most part, they chose the building material that was most readily available to them. He also wonders if some of the features such as unpainted fences and barns aren't more of a reflection of rural poverty than cultural preference. They are certainly a common feature in the rural South. One also wonders if comparing eleven Gentile settlements with twenty-six Mormon and five part-Mormon settlements constitutes a valid sample.

Nevertheless, Francaviglia is undoubtably a perceptive observer. His description of Cannanville, the typical Mormon settlement, is vivid and meaningful. He has seen more than most observers. If seeing is an art, he is an artist. Whether he is an impressionist or a realist remains to be proven.[1]

Utilizing diaries, letters, and contemporary publications, Jackson reconstructs the general perception of the environment that characterized

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[1]R. B. Francaviglia, "The Mormon Landscape: Existence, Creation and Perception of a Unique Image in the American West" (unpublished Ph.D. dissertation, University of Oregon, 1970).

most Mormon pioneers. The author begins with the perception of the East and Mid-Western areas where they first accumulated in large numbers. One general theory that he subscribes to is that men rationalize when forming opinions about their environment, emphasizing the favorable aspects and ignoring the undesirable ones. While Missouri was the gathering point for Mormon converts, the diaries, letters, and public statements were highly favorable, but after the Mormons had migrated to Utah they remembered many of the undesirable characteristics such as hot, humid days, fever, and malaria.

Jackson pays particular attention to the perception of the landscape on their long trek from the Missouri River to the Salt Lake Basin. He thinks this journey conditioned Mormon pioneers to arid conditions gradually. When they reached the Salt Lake Valley, contrary to the popular myth which has been accepted and frequently repeated by historians, that they viewed the Salt Lake Valley as a desolate desert, supporting only crickets and a few half-starved Indians, these first pioneers were generally pleased with the Salt Lake Valley. After their 1000 mile trek, they were relieved and pleased to see their new home. There was one diarist who reacted very negatively to the valley and her reaction has been repeated again and again in popular histories and has helped to create a folklore that is unsupported by the evidence. A thorough study of diaries and letters shows the opposite to be true. There were frequent references to rich soil, healthy climate and abundant resources. Jackson does not examine in detail any particular aspect of the environment; but rather focuses his attention on a favorable or unfavorable reaction to the total environment. Of particular concern was the idea of a barren desert, which the popular myth has exaggerated over the years. A random sampling of students at the Brigham Young University, and of local residents

revealed that the overwhelming majority believed the valley to be a barren desert-like area. Jackson maintains that this is partly due to the fact that people are comparing it to the unsettled areas of Utah today which are largely barren. He points out that such a comparison ignores the fact that the good lands have long since been put into farms and that these lands never did look like the barren areas of Utah today.

Jackson claims that Brigham Young's perception of the environment, which was strongly influenced by the reports of Lansford Hastings, led to some misconceptions which greatly affected colonization activities. Young apparently thought that land to the north of Salt Lake Valley was too cold to support colonies. Colonization was directed to the south not only because of Mormon desire to gain a route to the sea, but in large measure because of Young's misconceptions about the undesirability of northern valleys for supporting viable communities. Colonies were established in submarginal locations and settlers were admonished to stay and make a go of it. He maintains that part of the reason for the myth about the barremess of the Salt Lake Valley, was due to the desire of Church leaders to prove to these settlers that they could make these desert areas blossom like the first settlers had done in the Salt Lake Valley.

In summary, Jackson's study provides an insight into the way early Mormon pioneers viewed their environment and the impact that Brigham Young's perception of the environment played in directing colonization to the south rather than to the north, but does not look into colonization itself, nor does Jackson concern himself with settlement process.[1]

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[1]R. Jackson, "Myth and Reality: Environmental Perception of the Mormon Pioneers" (unpublished Ph.D. dissertaion, Clark University, 1970).

Although space does not permit an individual review of all related studies, additional authors who have dealt with Mormon settlement either directly or indirectly include Geddes (1934 & 1936), Cummings (1946), Taylor and Arrington (1958), Hawkes and Harline (1960), Johnson (1966), Schuster (1967), Hodson (1971), Rosenvall (1972), and Smith (1972).

CHAPTER II

HISTORICAL AND PHYSICAL SETTING

Historical Background

To understand the Mormon migration to the Great Basin and their methods and purposes of colonization, it is essential to sketch their historical development briefly.

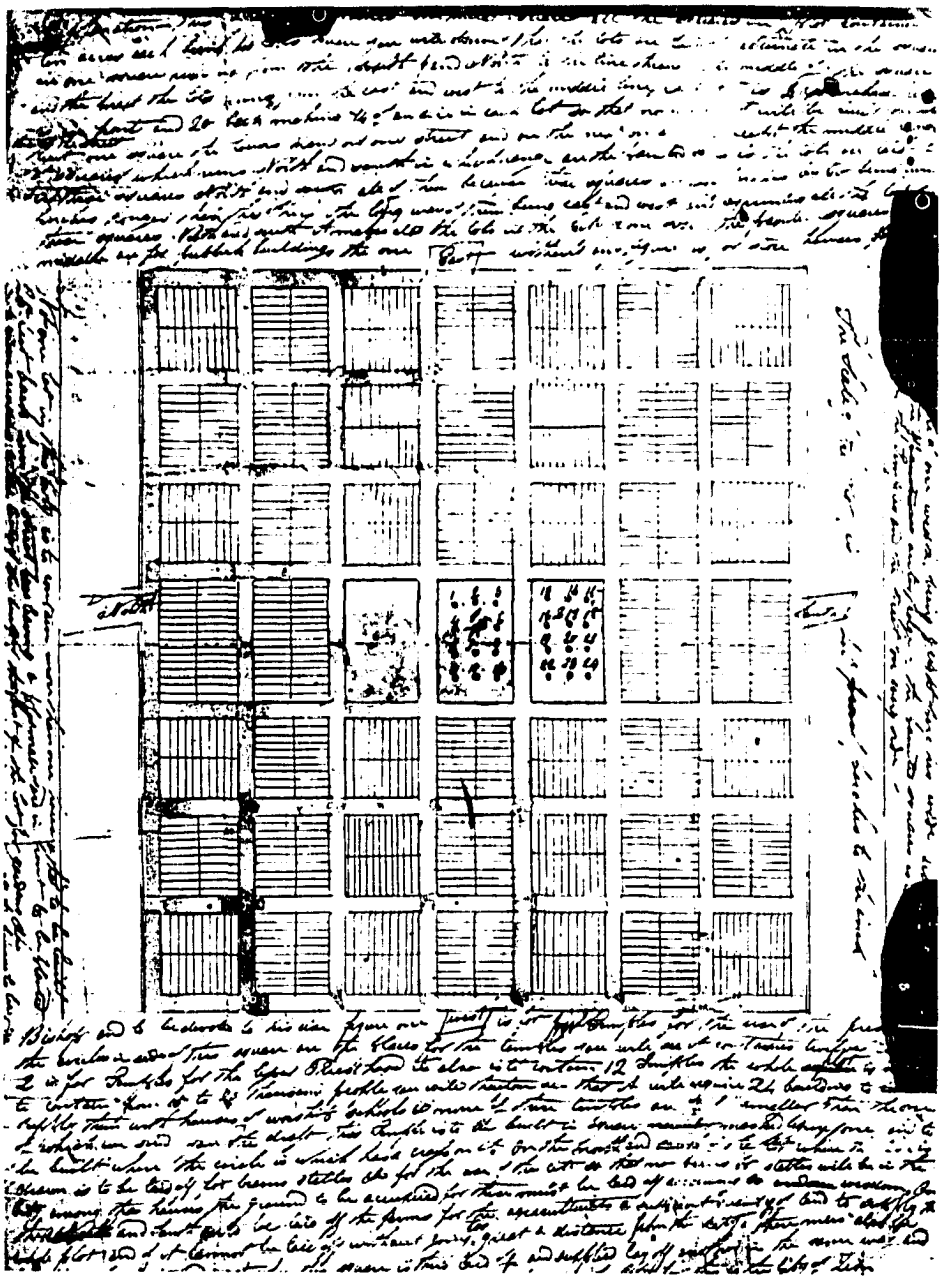
Mormonism emerged out of the era of religious fervor and revivalism that swept the American frontier in the early part of the 19th Century. A number of new Christian sects were born, most of which represented a fragmentation of existing churches whose internal differences in doctrine or practice could not be reconciled. Mormonism, however, developed as a distinct new entity whose unique characteristics were sufficiently different from those of other Christian sects to cause them to look upon it as a common enemy.

Joseph Smith, the founder of the new sect, claimed to be a prophet who had received instructions and authority from heavenly messengers to restore the Church of Jesus Christ to the earth. Smith had never belonged to any church prior to his establishment of the Church of Jesus Christ of Latter-day Saints (Mormon). Consequently, this did not represent any reformation or splitting of any existing religion. Smith claimed that it was founded by divine authority and was organized in the same form as the primitive church i.e. apostles, prophets, etc. The Church was officially organized April 6, 1830 at Fayette, Seneca County in Western New York, but within a year the headquarters of the new sect and most of its members had moved to Kirtland, Ohio near present Cleveland. From its inception, Mormonism has been and remains a strong proselyting religion. Missionaries were sent throughout the entire United States and much of Europe; they

met with amazing success, and converts were encouraged to migrate to the Church center at Kirtland.

Kirtland, however, was perceived as a temporary center for the gathering of Mormon converts. At the June conference 1831, Joseph Smith appointed several men to accompany him to Missouri to establish a new settlement which was to become their main headquarters. He proclaimed Independence, Missouri the site for the future "City of Zion" and the gathering point for the Saints. This was to be the center of Mormondom and the site for a temple to be erected to receive Christ at his second coming. The new Missouri settlement prospered as its population was continually augmented by the arrival of new converts and soon rivaled Kirtland in size and influence. Between 1831 and 1833, with little communication between Independence and Kirtland, there were obvious administrative problems in governing the two groups and minor jealousies developed. By far the majority of Church dignitaries came from Kirtland but it was the Missouri settlement that was to be the ultimate center and it was here that Smith introduced several innovations that influenced subsequent Mormon colonization. In June 1830, he sent a rough sketch of a city plat to Independence laying out their proposed Zion City. The instructions accompanying the plat were written in the margin (see Figure I). Since the hand-written instructions are not very legible and are not included in their entirety in Figure I, they are given below.

> The plot contains one mile square; all the squares in the plot contain ten acres each, being forty rods square. You will observe that the lots are laid off alternately in the squares; in one square running from the south and north to the line through the center of the square; and in the next, the lots run from the east and west to the center line. Each lot is four perches in front and twenty in back, making one-half of an acre in each lot, so that no one street will be built on entirely through the street; but on one square the houses will stand on one street



Reproduction of the original Plan of the "City of Zion"
in the Church Historians Office, Salt Lake City, Utah

and on the next one, another, except the middle range of squares, which runs north and south, in which range are the painted squares. The lots are laid off in these squares north and south, all of them; because these squares are forty perches by sixty, being twenty perches longer than the others, their greatest length being east and west, and by running all the lots of these squares, north and south, it makes all the lots in the city on one size.

The painted squares in the middle are for public buildings. The one without any figures is for storehouses for the Bishop, and to be devoted to his use. Figure one is for the use of the presidency; the circles inside of the square, are the places for the temples. You will see it contains twelve figures. Two is for temples of the lesser Priesthood. It is also to contain twelve temples.

The whole plot is supposed to contain from fifteen to twenty thousand people; you will therefore see that it will require twenty-four buildings to supply them with houses of worship, school, etc. None of these temples are to be smaller than one of which we send you a draft. This temple is to be built in the square marked Figure 1; and to be built where the circle is which has a cross on it.

On the north and south of the plot where the line is drawn, it is to be laid off for barns, stables, etc., for the use of the city; so that no barns or stables will be in the city among the houses, the ground to be occupied for these, must be laid off according to wisdom. On the north and south are to be laid off the farms for the agriculturist, a sufficient quantity of land to supply the whole plot; and if it cannot be laid off without too great a distance from the city, there must also be some laid off on the east and west.

When this square is thus laid off and supplied, lay off another in the same way, and fill up the world in these last days; and let every man live in the city for this is the city of Zion. All the streets are one width, being eight perches wide. Also the space round the outer edge of the painted squares, is to be eight perches between the temples and the street on every side. No one lot, in this city, is to contain more than one house, and that to be built twenty-five feet back from the street, leaving a small yard in the front, to be planted in a grove according to the taste of the builder; the rest of the lot for gardens; all the houses are to be built of brick and stone. The scale of the plot is 40 perches to the inch.[1]

It is clear from the above instructions that Joseph Smith considered city living more advantageous for social and educational benefits than scattered rural dwellings. His New England background seems to have influenced his perception of the rural villages as the ideal system of settlement.

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[1] Fox, "The Mormon Land System," pp. 13-14.

Although the Mormons were driven out of Jackson County, Missouri before they had a chance to build their "Zion," the plat did serve as a general precedent for later settlements. However, it may not have been intended to be more than a generalized scheme of settlement rather than a finalized blueprint for future development and colonization as some students of Mormon history have interpreted it (see Nelson, The Mormon Village, pp. 25-54). At least the plan was never followed very precisely in any of the subsequent settlements established by the Mormons. Furthermore, the population of 15,000 to 20,000 projected for Zion City was not very realistic. In order to supply that population with adequate houses of worship, school and other facilities, there were to be 24 public buildings, yet there were only 968 half acre lots contained in the plat for private homes. In order to house the 15,000 to 20,000 people suggested, it would be necessary to have exceptionally large families. To house 20,000 people in the city with one house per lot as stated, it would require 20.6 people per house, and 15.5 people per house to house 15,000 people in the city. This plat was drawn 12 years before the practice of polygamy was introduced.

Expulsion from Missouri

The continual growth of the Church, the peculiarity of its professed religious views, the New England origin of the bulk of the members and their hostility toward slavery soon brought the Missouri Mormons into conflict with their neighbors. The Mormon stay in Jackson County was short-lived. Angry mobs began to threaten their existence and were finally successful in driving them from Jackson County. The Mormons appealed for legal help and protection from state authorities, but found opposition there as well. On November 13, 1833, their homes numbering 203 were looted

and burned as the Mormons were expelled from the county.[1]

The Jackson County refugees found temporary asylum among sympathetic residents of Clay County to the north, but they agreed to remain there temporarily and to find new quarters within two years. North of Clay County the land gave way to prairie which was considered less desirable by Missouri settlers. Here Caldwell County was created in 1836 by the Missouri State Legislature as a place for Mormon settlement. This action led to the establishment of several Mormon towns--the most important being Far West. Again a city was laid out and a site for a temple designated. However, the rapidly growing and prosperous Mormon settlements aroused the suspicion and opposition of neighboring communities. Once again violence broke out between Missouri mobs and Mormon settlers. One of the chief antagonists from Jackson County, Lilburn W. Boggs, who was now governor of the state, ordered the arrest of Joseph Smith and several other prominent Church officials who were then placed in jail at Liberty for five months as relations with Mormon settlers steadily worsened. The antagonisms eventually culminated in Governor Boggs' famous extermination order. He directed the state militia either to exterminate the Mormons or to drive them from the state.[1] In the winter of 1838-39, some 15,000 Mormons fled their homes in Missouri, leaving property valued at $1,500,000.00 to make their way--some individually and some collectively--eastward across the Mississippi to Illinois.[2]

Establishment of Nauvoo

The next refuge of the Mormons was at Commerce, Illinois which name

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[1]William Mulder and A. Russell Mortensen, Among the Mormons (New York: Alfred A. Knopf, 1953), pp. 102-103.

[2]Gordon B. Hinckley, Truth Restored (Salt Lake City: Deseret News Press, 1947), p. 64.

they soon changed to Nauvoo. They began by purchasing large tracts of land mostly on credit and drained many of the swampy areas. The city of Nauvoo was laid out after the general pattern of the Zion plat, although it incorporated numerous differences. Nauvoo became the new gathering point and cultural center for Mormonism. Here for a period of five years Mormons enjoyed relative peace and their numbers rapidly increased as both Missouri and Ohio Mormons migrated to the new center. Their population was further supplemented by the continual arrival of immigrants from Europe as missionary efforts there brought more and more converts into the fold.

Mormon leaders were successful in obtaining a state charter creating a commonwealth with almost absolute powers and in establishing a state militia called the Nauvoo Legion under the command of Joseph Smith as lieutenant general. It was probably partially due to the autonomy of the commonwealth of Nauvoo, and the complete power of Smith within the commonwealth that eventual distrust and antagonism rose to such a peak in the surrounding areas and with state authorities. Smith insisted that no Illinois law could become valid in Nauvoo until it carried his signature. At election time he bargained with rival parties for favor, and even asked Congress to establish his city as a federal territory which would be free of state control.[1]

During the five years Smith lived in Nauvoo, the unique characteristics of Mormonism reached their culmination. Nearly all of the distinctive features which the Mormons exhibited later in the Great Basin were first developed in Nauvoo. One social innovation, which was to bring upon them untold problems, was the introduction of polygamy. Polygamy had been discussed as early as 1831, but the revelation concerning it was

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[1]Mulder and Mortensen, Among the Mormons, p. 124.

not recorded until 1843. However, because of the intense anti-Mormon feelings among their neighbors and the persecutions they were already being subjected to, it was deemed wise not to openly promulgate this new doctrine for fear of increased persecution. Polygamy was not announced publicly until the Mormons were safely established in Utah years later.

Unquestionably, Nauvoo served as the prototype for Utah and the colonization of the Great Basin. General John B. Clark had advised the Mormons back at Farr West that they should scatter themselves among the settlements rather than congregate in exclusive Mormon settlements. He predicted great calamities would befall them wherever they would collect in such large numbers.[1] The problems that Clark predicted were not long in coming. Opposition grew not only from the other Illinois population but within Nauvoo itself. A small group of non-Mormons, or Gentiles, who had lived in Nauvoo from the start, gradually increased their opposition to the rule of the Prophet and their ranks were increased by disillusioned apostates. The Mormons faced dissension within the city itself as well as problems of intense hatred in the countryside surrounding them.

Mormon leaders became convinced that they must look to the west if they were to find peace and succeed in building their Kingdom of God. They apparently saw no conflict between their concept of the Kingdom of God and their loyalty to the United States. In fact, Mormons felt in harmony with the spirit of Manifest Destiny and even sent memorials to Congress offering to help colonize Texas, the Oregon Country, and the vast areas between to bring these areas securely under the flag of the

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[1] Ibid., p. 113.

United States.[1]

Any active move to colonize empty areas of the west, however, was to await the tragic events at Nauvoo. On June 27, 1844, Joseph Smith and his brother Hyrum were murdered by a mob at Carthage, Illinois while awaiting trial on charges of treason.[2] Mob leaders apparently thought that the Mormon community was dependent for its very existence on the personal charisma of Joseph Smith; without him the Mormon community was expected to gradually dissolve. Such was not the case. Under the able leadership of the pragmatic Brigham Young, the Mormon community not only held together but continued to grow. Tensions began to rise again and it soon became evident to Young that there would be no peace in Illinois. He agreed that by the spring of 1846 the Mormons would leave Nauvoo to settle some place in the western United States. Their exodus began in February, 1846.

The Nauvoo Exodus and Journey Westward

Some sixteen thousand Mormons evacuated Nauvoo in February, 1846, crossing the Mississippi River. They went in three thousand wagons, taking with them 30,000 head of cattle, a great number of horses and mules and a large number of sheep.[3] The last remnant of Mormons, chiefly the aged and infirm, were expelled in September of that year. Not all of the sixteen

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[1] In 1844, the Council of Fifty was particularly interested in Texas, which had not yet been annexed by the U.S. and was then subject to numerous border raids by Santa Anna. Texas, on the other hand, was anxious to encourage new settlers into her southern border regions to secure her border. The Mormons proposed the establishment of an independent Mormon buffer state between the Nueces and Rio Grande Rivers. They sent an emmisary to France and possibly to Great Britain to ascertain the European reaction to the founding of such a state. Klaus Hansen, Quest for Empire (East Lansing, Michigan: Michigan State University, 1967), pp. 82-89.

[2] Bancroft, History of Utah, pp. 175-183.

[3] Arrington, Great Basin Kingdom, p. 18

thousand Mormons followed Young to Utah. It was nearly five years before the population of Utah was equal to that number and this included many converts who had immigrated to America from Europe after the exodus from Illinois. Some Mormons remained in the semi-permanent camps set up along the route westward; some followed splinter groups that refused to acknowledge Young's leadership; others became scattered in surrounding settlements; and many died. Many of these scattered members in the Mid-west formed the nucleus for the formation of the "Reorganized Church of Jesus Christ of Latter-day Saints" in 1860.[1]

However, the bulk of the Mormon population remained solidly behind the leadership of Brigham Young. On the Iowa side of the Mississippi River, these people were organized into companies of fifties and tens with officers over each group. Fear that they could not survive disunited, and the hope and faith that the new Prophet would lead them to a place of refuge kept the band together.[2]

It was obvious to Young and the other Church leaders that the pioneers strung out across the territory of Iowa in 1846 were in no condition to make the trek westward to the Great Basin that year. A temporary camp was set up at the present site of Council Bluffs on the east side of the Missouri River called Kanesville and a more permanent camp on the west side of the river at Florence, Nebraska named Winter Quarters. Here preparations were made for the trek westward to the Great Basin the following year.

In April, 1847, an advanced company consisting of 143 persons with

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[1] Bancroft, History of Utah, p. 644.

[2] Fox, Mormon Land System, p. 26

Brigham Young as lieutenant general began their trek westward to find a new home for the Mormon settlers. They remained on the north side of the Platte River in order to avoid contact with the immigrants traveling on the Oregon Trail and because they thought the grazing for their stock would be better.[1]

Arrival in the Salt Lake Valley

The pioneer company arrived in the Salt Lake Valley on July 24, 1847. But even before the main company had arrived, an advance party had already begun plowing and planting after a prayer of gratitude and dedication. A lack of green vegetables had been the cause of plague in Iowa and at Winter Quarters, which had resulted in much suffering and many deaths. Consequently, they were anxious to get crops planted in the Salt Lake Valley to supply needed vegetables for the coming winter and seed for the following spring. A dam was built across the waters of City Creek, in what is now Salt Lake City, and irrigation was begun by turning water out on the land, which allowed the pioneers to proceed with plowing at a much more rapid rate. Within eight days they had plowed a total of 53 acres and had planted 83 acres by August 10. Potatoes, corn, peas and buckwheat comprised the first crops.

On July 29, the new pioneers were reinforced by a group of 100 Mormons from Mississippi who had joined with 140 members of the returning Mormon Battalion who had spent the winter at Pueblo, Colorado.[2] In addition a second company of Mormons from Winter Quarters consisting of 1,554 souls under the leadership of Parley P. Pratt arrived on September 19.[3] The

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[1]Bancroft, History of Utah, p. 253.

[2]Mathias F. Cowley, Wilford Woodruff: History of His Life and Labors as Recorded in His Daily Journals (Salt Lake City: Bookcraft, 1964), p. 317.

[3]Levi Edgar Young, The Founding of Utah (New York: Charles Scribner's Sons, 1923), p. 121.

winter of 1847 found more than 2,000 refugees precariously established in the Salt Lake Valley under the leadership of a new prophet; the Mormons had founded a new Zion. They looked forward to the development of a new Mormon Kingdom in the Great Basin.

THE PHYSICAL SETTING

Physiography

The Salt Lake Valley, which was to become the focal point of Mormondom and the point of embarkation for the settlement of much of the intermountain region, was located at the eastern margins of the Great Basin at the base of the Wasatch Mountains. Here an alluvial piedmont stretched as a ribbon oasis for approximately 120 miles between the Wasatch Mountains and the two nearby lakes--Utah Lake and the Great Salt Lake. For the Mormons this was their promised land. The majestic mountain at the southern end of the Wasatch Range was named Mount Nebo and the river draining Utah Lake into the Great Salt Lake was called the River Jordan.

The Wasatch Range forms the eastern edge of the Great Basin. The crest of the range averages between 9,000 and 10,000 feet elevation and stands 4,500 to 5,500 feet above the valley floor. It is a fault block range and the sediments from this up-thrust block have accumulated in the Salt Lake Basin to depths of 7,000 to 8,000 feet.[1] Alluvial and colluvial deposits form an apron of coalescent fans and talus slopes along the western base of the range. The valley floor is relatively flat and

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[1]Kenneth L. Cook, et.al., "Some Cenozoic Structural Basins in the Great Salt Lake Area, Utah, Indicated by Regional Gravity Surveys," Guidebook to the Geology of Utah, #20: The Great Salt Lake (Salt Lake City, Utah: Utah Geological Society, 1966), p. 70.

the lowest portions are occupied by the above mentioned lakes.

During the Pleistocene Epoch, the entire valley was inundated by glacial lakes. Lake Bonneville existed during the Wisconsin Ice Age but it was probably preceded by at least two long lasting lakes of Kansan and Illinoin ages. The evidence of the earlier lakes is buried now under the sediments of Lake Bonneville. During the Wisconsin glacial period, the lake covered the alluvial piedmont at the base of the range and extended finger-like through the major canyons to form large bays in the back valleys on the eastern side of the range. Wave action formed substantial wave-cut and wave-built terraces along the edge of the mountains, which stand out as prominent land-form features today. Lake level fluctuated widely, resulting in a series of terraces that are visible in many localities. The earliest and highest of the shore lines is the Alpine, which developed when the lake level reached approximately 5,280 feet. The highest terrace that can be readily observed by the casual observer is the Bonneville terrace at 5,250 feet--approximately 1,000 feet above the present lake level. At this time the lake overflowed at Red Rock Pass in Cache Valley, Idaho and drained out the Portneuf drainage. The huge discharge quickly cut through the softer sediments of Red Rock pass down to solid bedrock, lowering the lake level some 450 feet. This is called the Provo Level and stands at 4,800 feet elevation. Here the lake experienced a significant still-stand at which time the streams emptying into the lake eroded earlier deltas and expanded them--capping them with Provo deposits. These extensive deltas at the mouths of the Ogden, Weber, and Provo canyons form prominent benchlands that supported extensive agriculture after the construction of high level irrigation canals and now support urban subdivisions.

After the Provo Period, the lake went through a very arid cycle and

almost, if not completely, dried up. Three later short lake cycles produced pronounced terraces at 4,770, 4,470 and 4,410 feet. The first is called the Provo II and the second the Stansbury Level.[1] In many areas subsequent erosion and deposition has obscured or obliterated the lake terraces. Thus the Wasatch Oasis comprises a complex combination of alluvial fans, talus slopes, shore line terraces, deltas, flood plains, and lake deposits.

The level of the Great Salt Lake has continued to fluctuate since the arrival of the Mormons in 1847. For the next several years, it rose steadily, reaching its highest point in 1873. Since then, the over-all trend has been downward. It dropped approximately 21 feet between 1873 and 1963.[2] The shallow nature of the lake means that many tens of square miles of mud flats lie drying in the sun with each foot that the lake level drops. On the other hand, when the lake level rises a few feet the areal extent of the lake is greatly enlarged. Consequently, the lake is bordered by extensive areas of salt marshes and mud flats.[3]

The approximate position of the lake shore at the time the Mormons arrived is shown in Figure II (a reproduction of Stansbury's 1850 map of the Great Salt Lake). The three largest rivers, the Provo, Weber and Bear rivers are antecedent streams that have cut impressive canyons through the

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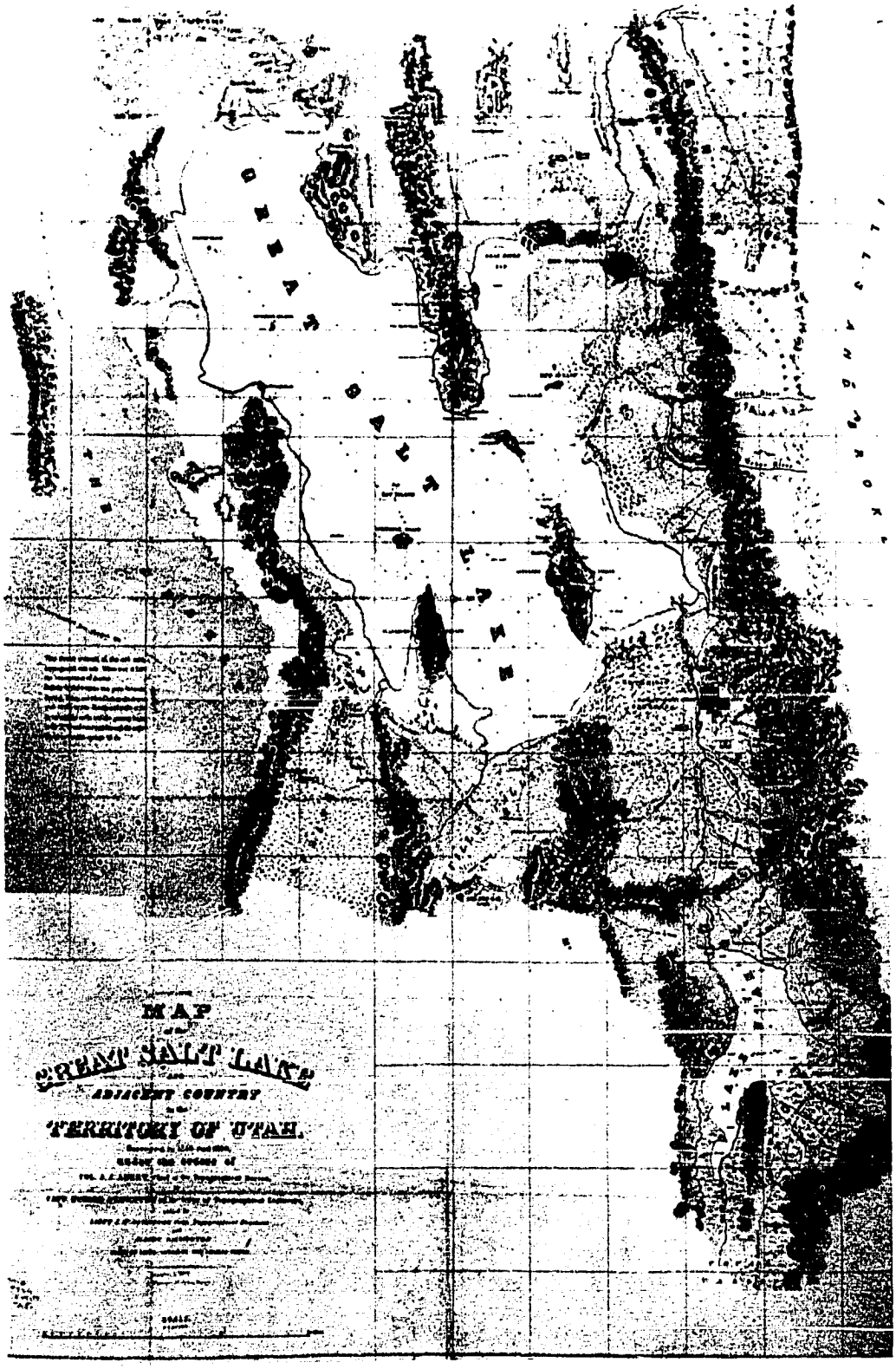
[1] Roger B. Morrison, "Predecessors of Great Salt Lake," Guidebook to the Geology of Utah, #20: The Great Salt Lake (Salt Lake City, Utah: Utah Geological Society, 1966), pp. 77-101.

[2] Southern Pacific Railroad, "Lake Level Chart of the Great Salt Lake, Measured at the Midland Gauge," (unpublished record maintained by the S.P. Railroad).

[3] For detailed information on the fluctuating levels of the lake and extent of present mud flats, see Deon Greer, Map Supplement 14, Annals of the A.A.G., Vol. 61 (March, 1971).

Figure II



Courtesy of the Bancroft Library

Wasatch Range, while the Bear River flows northward around the Wasatch Mountains and enters the Salt Lake Valley through the northern portion of Cache Valley, emptying into the north end of the Great Salt Lake. The other streams appearing on Stansbury's map represent local drainage from the Wasatch and nearby mountains. There are a number of intermittent streams not shown in Figure II. Some of these originate from permanent springs within the Wasatch Mountains, but have such a small volume that they sink into the alluvium as they emerge from the canyons. Others are very temporary streams that only flow after heavy rains or during brief periods of heavy spring run-off. There are no permanent streams draining from the Oquirrh Mountains at the west side of the valley between the two lakes. Nevertheless, Stansbury's map shows that an irrigation canal had been constructed to bring water from these mountains to the West Jordan vicinity as early as 1850.

Climate

The Great Basin lies in the rainshadow of the Cascade-Sierra Nevada Mountains producing an arid or semi-arid climate in most of the basin. However, the Wasatch Mountains cause a significant amount of orographic lift for eastward moving air masses resulting in an increase of rainfall along their western base. Most small scale climatic maps in atlases and text books include the Wasatch Front in the steppe (BS) climate, but it appears as Humid Continental-warm summer (Dfa) on Trewartha's map,[1] as Mediterranean (Csa) on the Koeppen-Geiger map,[2] and as Dry Subhumid on

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[1]Edward B. Espenshade, Jr. ed., Goode's World Atlas, Ninth Edition (Chicago: Rand McNally & Company, 1949), p. 8.

[2]Koeppen-Geiger, Klima der Erde, (1:16,000,000) Justus Perthes, Darmstadt.

Thorthwaite's map.[1] It does not fit well into any of the usual classifications.

The boundary between dry (BS) climates and humid climates for evenly distributed rainfall is derived from the Koeppen-Geiger formula (R=.44T - 8.5), where R = annual raintall and T = mean annual temperature.[2] Patton used a modified formula (R = ½T - ½Pw) where R and T are the same as above and Pw = the percentage of annual precipitation falling in the winter half year.[3] The BS/humid boundary is calculated for the four stations shown in Table I.[4]

Table I

BS/HUMID BOUNDARY

Station	Koeppen-Geiger Formula	Patton Formula	Mean Annual Precipitation
Brigham City	13.94	10.75	17.73
Ogden	13.67	11.70	16.95
Salt Lake City	14.25	12.10	15.49
Provo	13.28	10.00	13.50

Although Provo is very close to the BS/humid boundary using the Koeppen-Geiger formula, it is still on the humid side and the other stations are quite definitely humid. The difference is not great, however, and it

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[1]C.W. Thorthwaite, "An Approach Toward a Rational Classification of Climate," Geographical Review, Vol. 38 (January, 1948), p. 94.

[2]Joseph Van Riper, Man's Physical World (New York: McGraw Hill Book Company, 1971), p. 259.

[3]Glen Trewartha, Arthur H. Robinson, and Edwin H. Hammond, Elements of Geography (New York: McGraw Hill Book Company, 1967), p. 135.

[4]Raw data taken from station climatological summary charts: U.S. Department of Commerce, Weather Bureau, 1965.

is not surprising that Dr. Bowman Hawkes, a senior geographer at the University of Utah, considers Salt Lake City to be BS climate.[1] Ogden, Utah is included in Thornthwaite's aridity and humidity index showing the seasonal regime of moisture of selected stations. According to Thornthwaite, Ogden has approximately a 13 inch surplus of moisture in the winter months and a 34 inch deficit in the summer months, indicating a strong need for supplemental summer irrigation.[2] Dry farming, although practiced to a limited degree along the front, did not become significant in Utah until after 1903.[3] Maximum precipitation comes in the spring, and is followed by summer droughts. Yet, the severity of the drought is often alleviated by thunder showers in late July and August and an increase in average rainfall by September.

The BS/humid boundary is not the only questionable one in classifying the climate of the Wasatch Oasis. The border between C and D climates is 26.6° F. for the coldest month with the Koeppen system (Trewartha modified it to 32° F.). The January mean temperatures for the stations in Table I, listed in the same order, are: 26.4, 26.8, 27.2, and 25.7. Thus this region is not only near the wet/dry border but virtually on the severe winter/mild winter boundary. In addition, summer maximum temperatures barely meet the "a" requirement (71.6) for the hottest month. The Wasatch Oasis differs markedly from the Dfa climate of the corn belt with its hot humid summers, yet is too humid to fit well in the Steppe (BS)

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[1] H. Bowman Hawkes and Osmond L. Harline, The Salt Lake Area Land of Contrasts (Salt Lake City: Dept. of Geography, University of Utah, 1960), p. 9.

[2] Thornthwaite, "Classification of Climate," p. 80.

[3] Norah E. Zink, "Dry-Farming Regions in Utah," Economic Geography, Vol. 15 (1939), p. 421.

climate and too cold in the winter to fit into the Mediterranean (Csa) climate. Continentality shows up in the temperature extremes. It is not unusual for temperatures to exceed 100° F in the summer or drop to sub-zero temperatures in the winter. Brigham City experienced a high of 108° in 1931 and a low of -27° in 1932.[1] Perhaps the most accurate classification would be a cold inland phase of Mediterranean (Dsa), although such a category is not a traditional sub-classification of D climates.

The climagraphs (Figures III and IV) demonstrate the general characteristics of the climate as well as the homogeniety along the Wasatch Front. Differences are very slight from Brigham City in the north to Provo in the south.

Since the Wasatch and Uintah Mountains receive substantially more precipitation than the valleys, and the maximum precipitation falls in winter, the bulk of the moisture falls as snow. The mountains thus act as great storage reservoirs and melting snows from the mountains provide moisture throughout the summer months. The mountain station with the longest record of climatological data is Brighton (see Figure V). The precipitation regime is highly significant. Approximately 68% of the precipitation falls during the winter half of the year, resulting in snow depths that vary considerably from year to year but normally accumulates to depths of over 6½ feet and often reaches depths of 10 feet or more. This accumulation of snow in the mountains was crucial for the development of irrigation. During the spring, as weather turns warm, snows melt rapidly, and run-off is high. Yet the snow accumulates to sufficient

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[1] Climatological Summary Chart for Brigham City: U.S. Department of Commerce, Weather Bureau, 1965.

Figure III

SALT LAKE CITY

Elevation------4,220 ft.

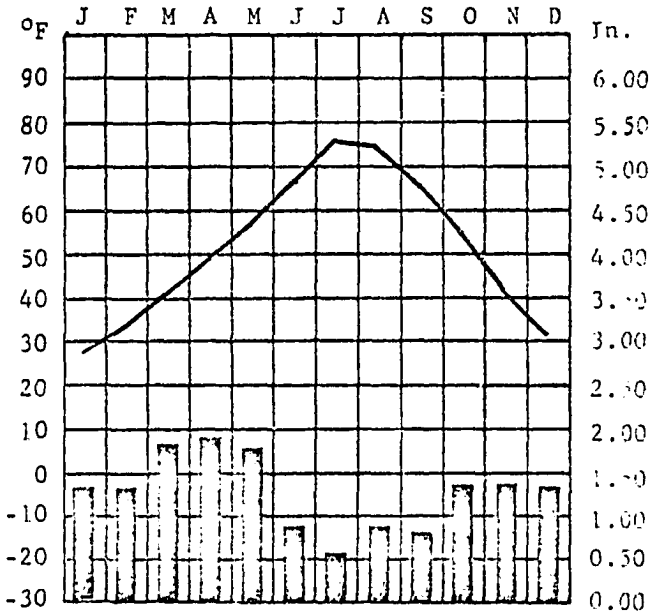
Latitude------40° 46' N.

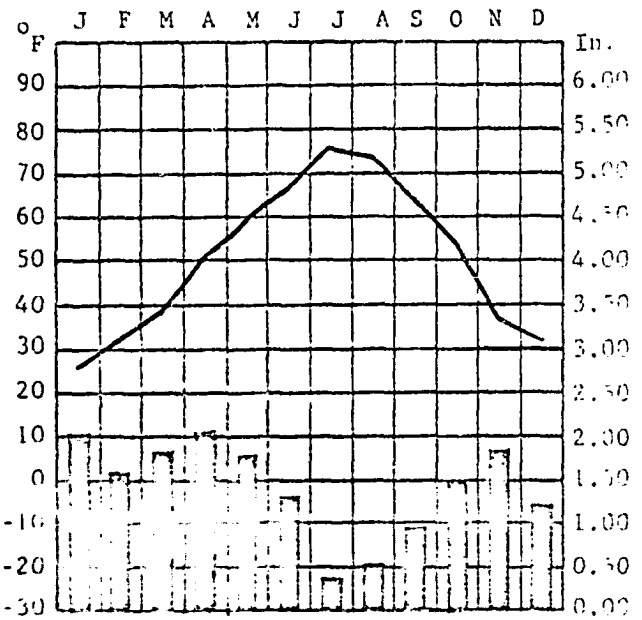
Longitude----111° 58' W.

An. Rainfall---15.49 in.

Mean Temp.-----51.7 °F.

Temp. Range----49.3 °F.





BRIGHAM CITY

Elevation-------4,335 ft.

Latitude-------41° 29' N.

Longitude-----112° 02' W.

An. Rainfall----17.73 in.

Mean Temp.------51.0 °F.

Temp. Range-----50.1 °F.

SELECTED CLIMAGRAPHS

Data taken from U. S. Department of Commerce: Weather Bureau

Figure IV

OGDEN

Elevation ----- 4,280 ft.

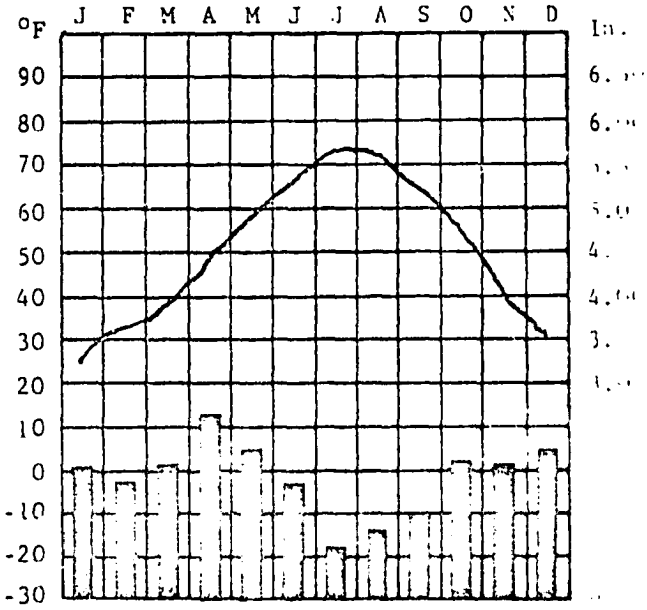
Latitude ----- 41° 14' N.

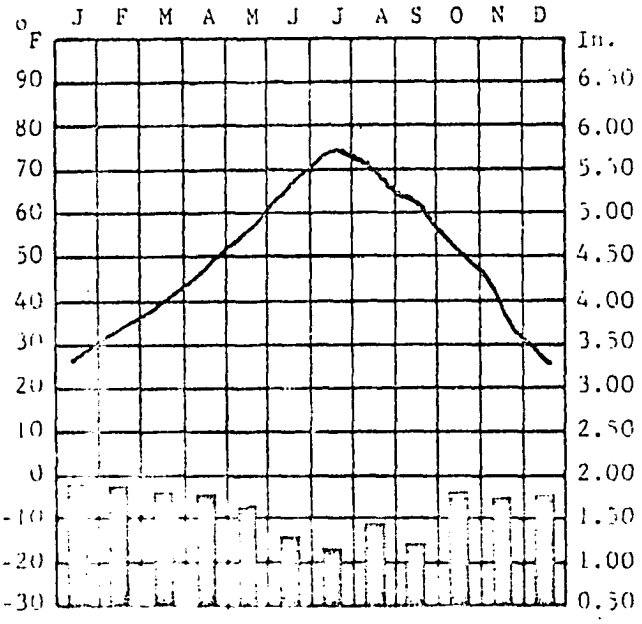
Longitude ---- 112° 2' W.

An. Rainfall--- 16.95 in.

Mean Temp. ---- 50.4 °F.

Temp. Range ---- 45.9 °F.





PROVO

Elevation	4,470 ft.
Latitude	40° 13' N.
Longitude	111° 40' W.
An. Rainfall	13.50 in.
Mean Temp	49.5 °F.
Temp. Range	47.3 °F.

SELECTED CLIMAGRAPHS

Data taken from U. S. Department of Commerce: Weather Bureau.

Figure V

BRIGHTON SKI AREA

Elevation------8,700 ft.

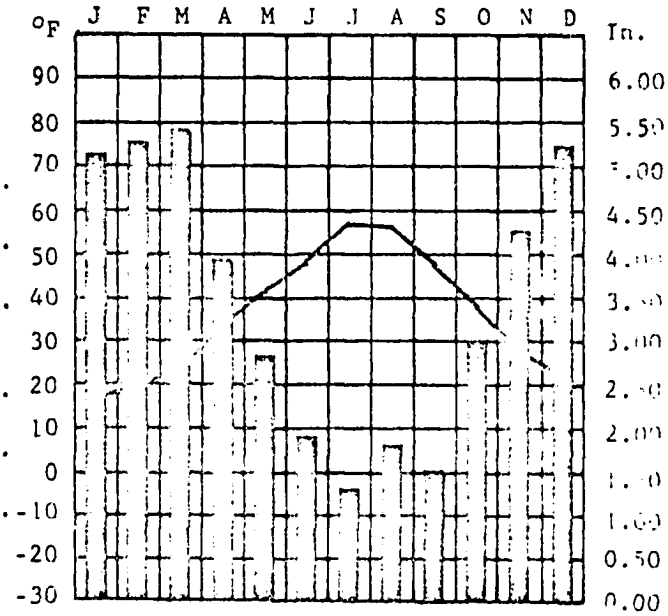
Latitude------40° 36' N.

Longitude----111° 35' W.

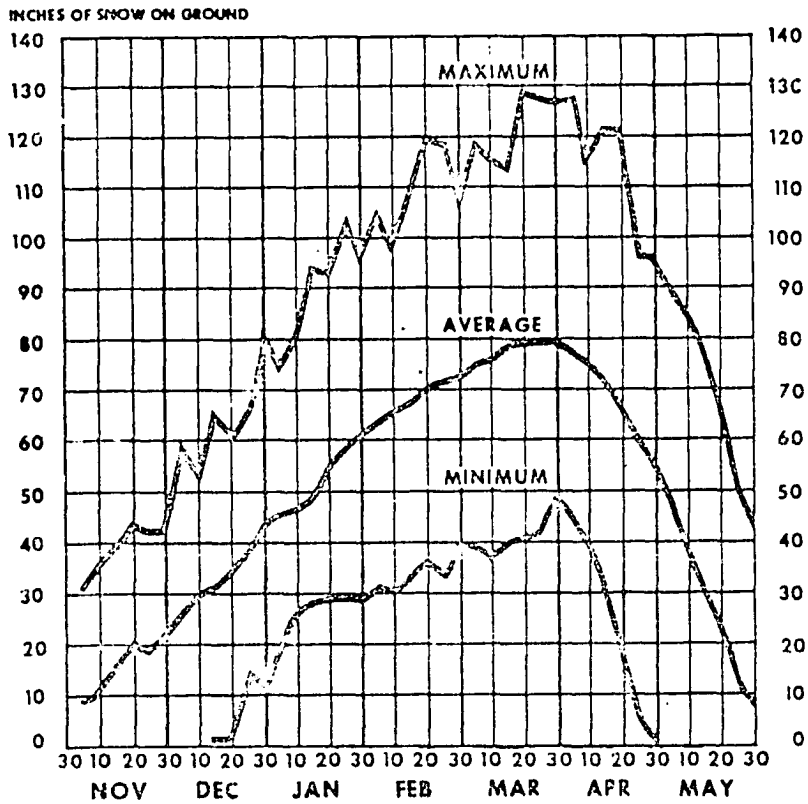
An. Rainfall---41.45 in.

Mean Temp.-----36.5 °F.

Temp. Range----39.2 °F.



SNOW DEPTHS AT BRIGHTON 1920-1965



depths to assure a continual source of water for many of the larger streams, which in turn provide a continual potential source of water for irrigation.

Vegetation and Soils

Like the climate, vegetation was essentially homogeneous from north to south but did exhibit a pattern of zonation east-west. Along the lower slopes of the mountains, oak brush and sumac formed the dominant forms of vegetation, which, in sheltered areas where soil moisture was more abundant, grew much taller than on the more prevalent west facing slopes. As the slopes decreased westward, the oak brush gave way to grassy plains dominated by bunch grass but interspersed with prickly pears, sagebrush, and rabbit brush in the drier areas. The importance of grass in the natural vegetation pattern is authenticated by Escalante's experience upon entering Utah Valley in 1776:

> We found the pasture in the valleys we were crossing recently burnt, and still burning in other valleys. From this we suspected that these Indians had mistaken us for Comanches, or another unfriendly tribe, and as they had perhaps seen that we had horses with us they had decided to set fire to the pasture lands along our route so that the lack of fodder would compel us to leave the plain more quickly.[1]

Powell also referred to the grass covered bench lands in the 1870's: "near to the mountains the grass lands are fair but they have been overpastured and greatly injured."[2] Salt tolerant grasses became dominant as one approached the lake shore, giving way to rushes and tooles near the water's edge while the stream bottoms were usually covered with galeria

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[1]Quoted by Walter P. Cottam, Our Renewable Wild Lands--A Challenge (Salt Lake City: University of Utah Press, 1961), p. 67.

[2]John Wesley Powell, Report on the Lands of the Arid Region of the United States (Cambridge: The Belknap Press of Harvard University Press, 1962), p. 121.

forest of cottonwoods and boxelders.

Soils exhibit a similar east-west zonation pattern. On the well drained grassy bench lands, soils range from brunizems near the mountains to chestnut soils on the more gentle slopes. Soluble materials including carbonates have been leached from the A horizon, leaving it neutral to slightly acidic. The parent material from which the soils were formed consists primarily of colluvium deposited at the base of the steeper slopes, alluvium washed into the ancient Lake Bonneville and sorted by wave action, or alluvium washed out of the mountains subsequent to Lake Bonneville by intermittent streams and deposited in alluvial fans. Consequently, there is a general east west alteration of texture as well. Next to the mountains, soils tend to be very coarse or gravelly but further west give way to sands, then silts and finally clays out near the lake. The clay soils of the lowlands are often poorly drained and fall under the intrazonal soil order including Solonchak, Solonetz, Calcisols, and Humic Gley soils. They are generally calcareous and are strongly affected by salts and alkali.[1]

To the weary Mormon immigrants arriving in the Salt Lake Valley in the mid-nineteen th century after an arduous journey by foot or ox-drawn wagon across the increasingly arid plains of Nebraska and Wyoming, the Salt Lake Valley was a welcome sight. In general, the new arrivals were greatly encouraged by the grass covered alluvial piedmont stretching westward toward the lake, which offered foliage for their cattle, and the promise of adequate water for irrigation from frequent mountain streams. To them it was a promised land that offered abundant opportunities for an

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[1]U.S. Department of Agriculture, Soil Survey: Davis-Weber Area, Utah (Washington D.C.: Government Printing Office, 1968), pp. 110-123.

energetic people who were laying the foundation[1] of a kingdom that had the blessings and guidance of deity.

[1]Richard H. Jackson, "Myth and Reality: Environmental Perception of the Mormon Pioneers," Rocky Mountain Social Science Journal, Vol. 9 (1972), pp. 33-38.

CHAPTER III

INITIAL PATTERN OF SETTLEMENT IN THE CORE

Choosing the Location of Salt Lake City

Almost immediately after the first Mormon colonists arrived in the Salt Lake Valley, exploring parties were organized to make a thorough reconnaissance of the area. Knowing that there would soon be thousands of new settlers arriving in the valley, it was imperative that they learn as much about the region as possible. The reconnaissance parties were not only looking for suitable sites for the founding of additional colonies but also to ascertain if they had indeed chosen the best site for their major settlement. Norton Jacob gives this interesting account of the results of the first exploration and the selection of Salt Lake City as the main settlement.

> The Twelve returned today from their excursion to the west; went 30 miles along the south coast; saw much salt and other curiosities; bathed in the lake and found the water so strong as to float a man on its surface. It [is] warm, being no doubt kept in that state [by] the multitude of warm and hot springs that flow into it, making the wind that reaches us from the northwest warm, which, together with the saline particles that float in the atmosphere, will make the climate mild and salubrious in the winter and prevent much snow falling in the valley but rather rain. This [is] the testimony of the traders. Brother Kimball and those that have been on the seacoast say that the smell and appearance of the air here is precisely the same as in the neighborhood of the ocean! Certainly I never was in any place where the heat of midsummer was so tempered as it is here by the salt. Everyone that came here sick [is] rapidly becoming strong and healthy. Many have experienced great benefit from bathing in the warm mineral springs. It appears the Indians have used them for the same purpose. Two of our hunters brought in a deer.
>
> At 8 o'clock p.m. the President summoned all the Camp to attend a council on the spot intended for a temple lot, in the forks where this creek of pure cold spring water spreads into several branches over this delightful plain. [It] is capable of watering a city of 100,000 inhabitants. It was a beautiful and instruct[ive] scene--the soft mild air that always prevails here at night so that the men sit down comfortable in their shirt sleeves; the full moon [that] shone over the eastern mountain shedding her mild radiance on the quiet valley of the Utah outlet;

while we were seated on the ground engaged in council upon matters of vast importance. Cheerfulness and general hilarity prevailed in our little company, those that had been out exploring relating their adventures and the result of their observations. At length the President said that there was one question he wanted brought under the consideration of the council: 'Shall we look further or make a location upon this spot and lay out and build a city?' We were pioneers of the Church and our business was to seek for a suitable location for the Church. 'The question is, shall this be the spot or shall we look further? I want all to freely express their minds and feelings.'

A motion was made to locate here. I seconded it and remarked that if we went up south to the Utah Lake the country was occupied by the Indians, while here it was unoccupied. Brother Snow said he would speak a few words and perhaps he might express the feelings of others. There were two reasons why he was in favor of this place: all that have been out exploring universally return satisfied with this place; and the other is, the Lord has led us directly to it. He was well satisfied with it and he believed all the brethren were generally of the same feelings.

The President said if this was their feeling he wanted them to manifest it by saying aye. [Then] it was unanimously decided in the affirmative. [He] then remarked the feeling of the Twelve was the same and he knew that as [a] general thing the minds of the brethren were like this: If they should say, by revelation, this is the spot, they would be entirely satisfied if it was on a barren rock. 'Well, I know it is the spot, and we have come here according to the suggestion and direction of Joseph Smith who was martyred. The word of the Lord was, 'go to that valley and the best place you can find in it is the spot.' Well, I prayed that he would lead us directly to the best spot, which he has done, for after searching we can find no better.'

Brother Wm. Vance said his feelings had been different from his brethren, but he supposed he was wrong. He felt as though we should go farther, perhaps on the other side of the lake. The President replied that Brother William had a perfect right to his views, but if we were on the other side of the lake we should not have the benefit of the warm north and west winds from the lake. 'I knew this spot as soon as I saw it. Up there on that table ground we shall erect the Standard of Freedom.'[1]

Jacob's contemporary account is highly instructive. Since his was a daily journal, the above entry must have been recorded the day of the event or soon afterward and represents a contemporary observer's descriptive account of events. He provides several significant insights

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[1] Norton Jacob, unpublished diary, typescript, Utah State Historical Society, Salt Lake City, Utah, July 28, 1847, pp. 72-73.

into the process of establishing this first settlement in the Salt Lake Valley. (1) Virtually all of these first settlers seemed to have a favorable impression of the physical environment and were enthusiastic about the possibilities of their new home. (2) The pioneer company had gained as much knowledge of the area as possible from traders before they arrived. (3) They did not accept their first camp as the permanent site for their major settlement until a thorough reconnaissance of the area had been made to determine if there were better sites elsewhere. (4) The decision to locate their new center of Zion at Salt Lake City was made by a democratic vote. The entire camp was assembled at a council meeting to hear the reports of the exploring parties and to decide where their permanent location would be. After a motion was made to locate at present Salt Lake City,the pros and cons were discussed. Brigham Young then called for a vote which was reported as unanimous in the affirmative. (5) There was at least one dissenting opinion, William Vance, but he apparently did not vote against the majority. It was after this public vote that Young gave his official announcement that the Lord had directed them to the right spot. Evidently he wanted the decision to come from the people rather than as an authoritative statement from himself. Actually, the members of the apostle's quorum met earlier that day and voted to accept this location, and had developed a general plan for the city![1]

The Plan for Salt Lake City

After this official decision regarding the location of the new Mormon center, Brigham Young presented the plan for this new city and

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1 Roberts, Comprehensive History, Vol. 3, pp. 280-281.

its environs. The pioneer company had to look beyond the immediate needs of the camp and plan for the future influx of settlers that would be arriving each year. There were thousands of Mormons camped along the Missouri waiting to come and many more in other parts of the nation and the world. The following account describes the general plan for laying out the city and neighboring farm land and the method of distributing land.

> The city was laid out in blocks of ten acres, divided into eight lots, of equal size, one and a fourth acres in each. President Young expressed a desire that the houses be built in the center of the lot, so that in case of fire the neighbors' houses would not be endangered, being so far apart. The design of President Young was that no speculation in lands by the brethren should be allowed whereby the first comers should enrich themsleves at the expense of their brethren who should follow.
>
> Close up to the city limits, the farming land was parcelled out in five acre plots, joining them a little farther out into ten acres, and outside of these twenty acre fields. This arrangement prevented any one man from holding a large tract near the city, and by so doing prevented speculated by the individual to the detriment of the whole community.[1]

Salt Lake City's plat followed the general plan of Smith's "Plat of Zion City" discussed in Chapter II. However, there were several significant differences. The Zion Plat encompassed only one square mile and envisioned a maximum population of 15,000 to 20,000--a very high number considering the number of lots. Population beyond 20,000 was to be absorbed by adding more towns laid out in a similar manner. Plat A. of Salt Lake City, which was surveyed in 1847, contained 135 blocks, more than two square miles, and additional plats were added in 1848 and 1849. It was planned from its inception to encompass a larger area than the "City of Zion" yet it did not reach a population of 20,000 until 1880. Blocks were square and contained 10 acres divided into eight lots of 1 1/4 acres each, compared to the 1/2 acre lots of the Zion Plat, producing a much

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[1]Cowley, Wilford Woodruff, p. 317.

lower population density than that planned for Zion City.

The Salt Lake City streets were 40 feet wider than the streets in the Zion Plat, allowing 20 feet for sidewalks on each side. In the Zion Plat the public blocks were larger than the rest, comprising 15 acres each, whereas all of the blocks in the original Plat of Salt Lake City were the same size. In both plans, the lots in one block would run north and south but east and west in the neighboring block in order that houses would not front each other on opposite sides of the street. (See Figure I & Figure VI.) Figure VI shows a section of Plat A of Salt Lake City with the names of those individuals who were granted a lot as an inheritance.

Distribution of Land

The method of distributing land in the new settlement was done by casting lots.

> And to the end that every man may be satisfied with his lot and put away any hardness that might occur by any other method of dividing the land, we have proposed that it shall all be done by ballot, or casting lots as in the days of old, it was judged expedient among Israel.[1]

As additional settlers arrived, they were granted lots within the Plats that were added. First settlers were not allowed to sell their land until improvements were made.[2] The Salt Lake County Record of Deeds records transactions of land sales as early as September, 1850. If there were earlier transactions, there is no record of them.

Construction of First Fort

It was deemed expedient to provide some protection from the Indians

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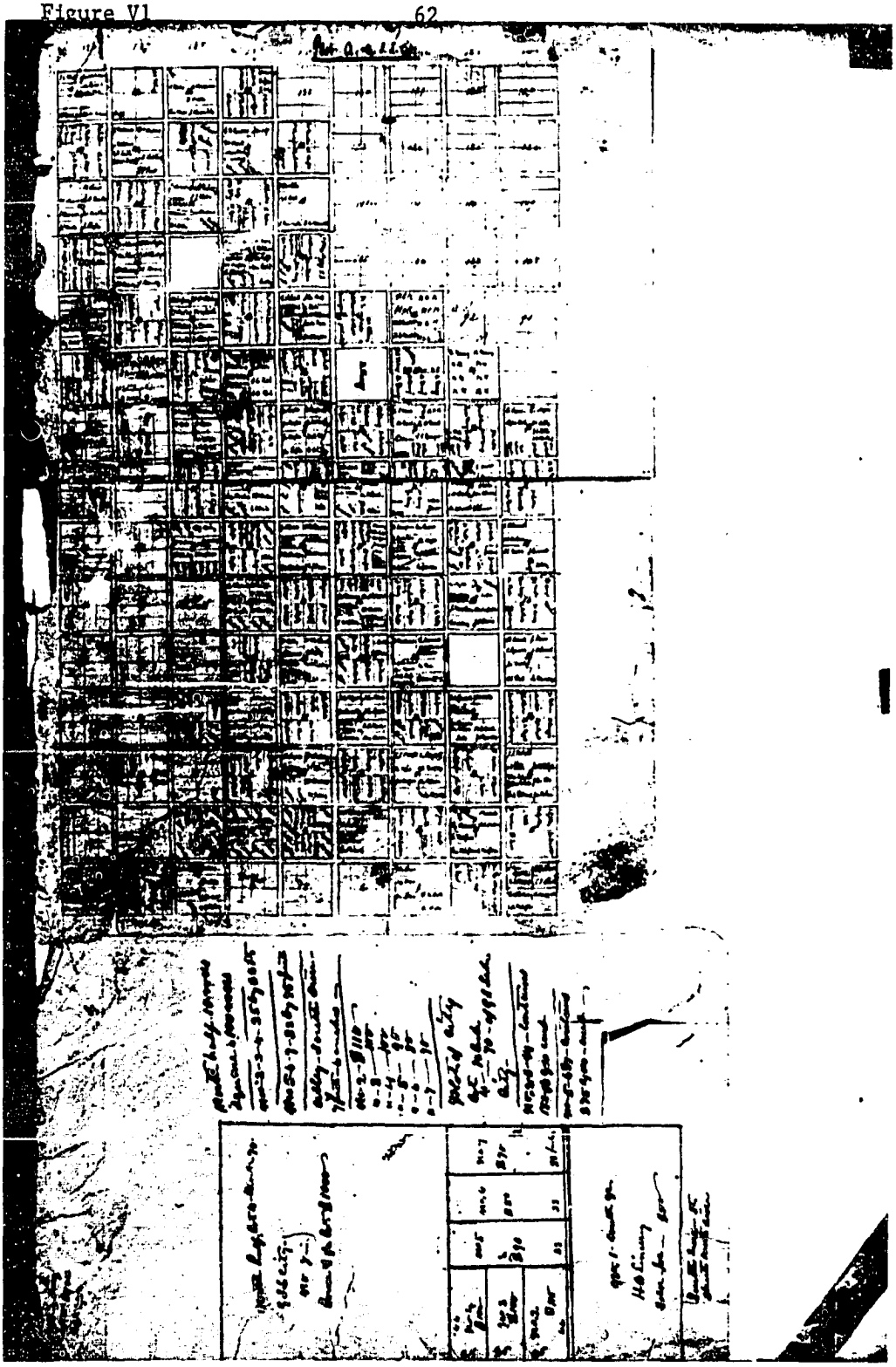
[1]Letter, Brigham Young to Elder Orson P[illegible] George A. Smith, and Ezra T. Benson, and the Saints scattered abro[illegible] in Pottawatamie County, and neighborhoods. Oct. 9, 1848, Messages of the First Presidency, ed. J. R. Clark, Vol. 1 (Salt Lake City: Bookcraft, 1965), p. 343.

[2]Norton Jacob diary, p. 73.



Reproduction of the original Plat of Salt Lake City showing land ownership

(Courtesy of the Salt Lake County Recorder's Office)

before Church leaders left to go back to Winter Quarters. A log fort constructed on the 6th Ward Square consisted of a series of log and adobe cabins entirely closed in the form of a square with the highest walls on the outside without doors or windows. The roof was made of boards or split poles covered with brush and earth and sloped towards the inside of the fort. Many of these were made without sufficient slope to ensure adequate run off; consequently, they were troubled with leaky roofs whenever it rained or the snows melted.

Three other similar forts were constructed during the winter and following summer in order to provide adequate housing for the expanding population. When Brigham Young returned to the Valley in September of 1848, he found two of these finished and the last nearing completion. Oliver B. Huntington, an immigrant in that company,described their entrance into the valley, and the appearance of these forts.

> . . .great numbers came out to meet us when within 2 or 3 miles of the Fort (Two dobah [sic] forts were completed and two more nearly finished). In these lived nearly all the inhabitants. We entered on the 20th day of September 1848. A fine clear, fair day and the Fort, as we emerged from the Kanion, had a rather singular appearance; or rather the whole Valley was the great scene of curiosity, wonder and astonishment, and [the] Fort contributed much to the grandeur of the view before us. . .
>
> . . .Aside from the Forts, there was but one house in the valley. The forts were built on a square covering about 10 acres each and adjoining each other. Three completed and the fourth was in process of building and nearly finished. The east side of the old fort which the pioneers built was of logs; the remainder was of adobe or as they are commonly called Do-by, the last syllable spoken like "bee" short, which are a large species of brick baked or dried in the sun; they are quite hard and have been known to last near 200 years. On the North, South, East and West side of each was a large gate to each fort. The outside wall of the fort was the outside wall of the houses. Thus properly the forts were formed by the joining of houses, and windows were regular built port holes.[1]

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[1]Oliver Boardman Huntington, unpublished journal, MS, microfilm in the Bancroft Library--Original in the Huntington Library, September 20, 1848, pp. 30-35.

Instructions to New Colonists

When Young considered the newly founded settlement to be sufficiently organized and prepared to carry on through the coming winter, he and the other apostles prepared to return to Council Bluffs to get their families. They appointed a High Council under the direction of John Smith to take charge of the new settlement. The following excerpts from an epistle of the Twelve Apostles to the Saints in the Great Salt Lake City Great Basin, North America, described the status of the new settlement and gave instructions to their inhabitants.

> It is wisdom that certain officers should exist among you to preside and attend to the various branches of business that may arise in our absence. . .Whose duty it will be to observe those principles that have been instituted in the stakes of Zion for the government of the Church and to pass such laws and ordinances as shall be necessary. . .the High Council shall be furnished with a city plan on which shall be registered those who have had their inheritance assigned them. . .while with you we used the utmost diligence to erect a fort of sufficient size to contain houses for all who will be at the city this coming winter and we hope the brethren will not release their exertion until the fortification is completed. . .we would recommend high and strong fences within the enclosure and about two rods distance from the houses which will form a yard of sufficient extent to contain all your cattle and horses should any alarm demand their securities, otherwise you better yard your cattle without the wall, so as to keep the fort as clean as possible; also in the corner of this enclosure all your hay may be stacked with safety, for it is wisdom that you should cut some hay so that your stock may be provided for in case of deep snow, Indian alarm, or any other contingency. . .
>
> We recommend that the cattle yard within the fort be plowed and prepared in the best possible manner for gardens and a just portion alloted to each family for a garden. . . the land bordering on the west line of the city, is at present designed for common pasturage, (this was river bottom land along the Jordan River) that on the south and east for farming, so far as it shall be needed: a plot of which we have left for the city surveyor, Henry G. Sherwood.
>
> A sundried brick wall eight feet high is considered the best farming fence in our present situation. It is desirable that the brethren unite their labors so as to enclose their farming lands in large tracts, everyone fencing in proportion to the land he agrees to occupy; thus much land can be enclosed with little labor and more time can be had for

> tillage; every man can plow and sow as much as he pleases and have his fields to himself as though it were surrounded by his own fence.[1]

The High Council remained responsible for both the spiritual and temporal welfare of the inhabitants of Salt Lake City through the fall and winter of 1847-1848. When the General Authorities returned with the incoming immigrants the following summer, a more elaborate and permanent form of government was organized.

Effort to Keep Settlers Within the Fort

During the fall and winter of 1847-1848, the High Council took stringent steps to keep settlers within the confines of the Salt Lake Fort. The Council apparently considered it unwise and perhaps dangerous to have settlers dispersed throughout the countryside. It was too soon to be able to predict just what their relationship would be with the native Indians.

The close confinement of such living quarters produced social stresses. A survey of the minutes of the High Council shows that much of their time was spent settling personal disputes and grievances. A few disgruntled settlers, led by William Weeks, left the main settlement in Salt Lake and moved northward to the Weber Valley near the site of Miles Goodyear's fort. On October 6, 1847, John Young reported to the High Council that Weeks and those who had gone with him were considered, by himself and President Smith, not to be in good faith. The following day the High Council decided to send the marshal with a message from the High Council informing Weeks and his associates that they should return to the camp. On October 11, 1847, the marshal reported to the Council that "Brother

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[1]Journal History, MS (L.D.S. Church Archives, Salt Lake City), Sept. 9, 1847.

Weeks and Co. said they would return and that all of them had made use of harsh remarks, 'did not like so much bondage, etc.' The report was accepted, and the marshal discharged in the case. However, this did not end the matter, the Weeks group did not return soon enough to suit the High Council. On October 25, 1847, the marshal was sent with nine deputies to bring the wayward settlers back to the fold. The same day, Lorenzo D. Young, a very prominent member of the settlement, was called before the High Council and asked to explain why he had built his house outside the fort.[1] Hansen stated that several families were living outside the fort: "Some of the people, however, built and dwelled on Mill Creek and the Cottonwoods."[2]

Spread of Settlements in the Core

At this same time, Perrigrine Sessions was pasturing a large number of cattle about 10 miles north of Salt Lake City in the present vicinity of Bountiful. This was apparently not considered in violation of the High Council's instructions; in fact, it was in keeping with the general instructions given by Brigham Young before his departure, that cattle should be pastured outside the city. In the spring of 1848, Sessions turned his attention to farming and building a home, thus founding the first settlement other than Salt Lake City. His example was soon followed by others as an influx of additional immigrants made the founding of new settlements desirable. Additional settlements were then encouraged rather than curtailed. In a number of cases, the first

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[1]Ibid., Oct. 6, 7, 11, and 24, 1847.

[2]Peter O. Hansen, unpublished diary, MS, L.D.S. Church Archives, 1847, p. 69.

settlers were actually stockmen searching out herd grounds with suitable vegetation and adequate water where they could pasture their cattle.

The first settlement beyond the Salt Lake area itself was in the Weber Valley at the present site of Ogden. A fur trapper, Miles Goodyear, had established a fort here several years prior to the coming of the Mormons. He convinced the Mormon settlers that he had title to the land in the Weber Valley by virtue of a Mexican Land Grant obtained in 1841.[1] With money obtained from government payments to the Mormon battalion, this grant was purchased from Goodyear in January, 1848 by John Brown. Although he purchased the Goodyear grant in his own name, other settlers were invited into the region and granted land without cost. Brown, however, retained the cattle purchased from Goodyear for himself. Ogden became the hub colony for the entire Weber region, from whence several other settlements were founded nearby in subsequent years.

A year later settlement was begun in Utah Valley to the south. The comparatively large number of Indian inhabitants made Mormon leaders cautious about establishing a settlement there. In the spring of 1849, at a council meeting held in Heber C. Kimball's home, it was decided that a colony of 30 men should establish a fort in Utah Valley for the purpose of fishing, farming, and teaching cultivation methods to the Indians. These first families were selected by Church officials and commissioned to establish a permanent colony in Utah Valley. They built Fort Utah at a site about two miles west of the present city of Provo. At first the new settlers seemed to enjoy a fairly friendly

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[1]Apparently no such grant ever existed. A number of historians have searched in vain for any record of it. Leland Creer, The Founding of an Empire (Salt Lake City: Bookcraft) 1947, p. 92.

relationship with the surrounding Indians but this did not last long. On August 1, 1849, a dispute over a stolen shirt resulted in the murder of one of the Indians. After this unfortunate incident, relationships between the Mormon settlers and the Indians steadily worsened and finally broke out in open hostilities in February, 1850. After a brief and disastrous war (for the Indians) the more bellicose braves were either killed or driven out of the region.[1] The resulting period of tranquility brought many settlers into Utah Valley. In the spring and summer of 1850, eight new settlements were founded.

According to Hunter, there were 43 colonies founded in the Great Basin by the close of 1850.[2] Several of these were outside the Mormon Core area but the bulk of them were scattered along the Wasatch Front. Figure IX shows the location of the 36 settlements in the Core. At this early date it is doubtful that all of these could accurately be described as colonies since some of them consisted of only one or two homes and may not have been occupied throughout the year. Nevertheless, they soon developed a central nucleus with an ecclesiastical ward or branch organization.

Development of Mormon Villages

Most of the first Core settlements soon developed into agricultural villages--a significant departure from the dispersed pattern of isolated farmsteads common elsewhere on the Western frontier. Students of Mormon social history have long been intrigued by these Mormon villages. Lowry Nelson, a sociologist, did a thorough study of selected villages in Utah

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[1] Hunter, Brigham Young the Colonizer, pp. 212-220.

[2] Ibid., pp. 361.

and attempted to determine why the village pattern developed. He concluded "that the Mormon village was a social invention of that group motivated by a sense of urgent need to prepare a dwelling place for the Savior at his second coming."[1] He concluded that the plat of the city of Zion served as the model which was copied over and over again in the villages of the Great Basin. Such an interpretation has been challenged in recent studies: e.g. Layton 1962, Baum 1967, Jackson 1970, and Rosenvall, 1972. These studies have shown that far from having one plan that was copied over and over again, that there was considerable difference from village to village in settlement plats. They differed in the width of the streets, the size of the blocks, the number of lots in a block, the size of the lots, and the shape of the blocks. A survey of the earliest available town plats in the county recorder's offices of the five counties along the Wasatch Front reveals a great deal of variation not only between towns but also within towns. It was not unusual for east-west streets to differ in width from north-south streets. Nor was there always consistency within the town in the size and shape of the blocks, nor the number and size of lots in a block. Street width was designated in terms of chains. Main streets were usually two chains (132 feet) wide, while the most common size for other streets was one and a half chains (99 feet). Minor streets were sometimes one chain (66 feet) wide. If the Zion Plat was used as a model in laying out these towns it was used only in a very general way.

Yet there were some similarities in these settlements. Early plat maps show that the larger cities, Salt Lake City, Ogden, and Provo were

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[1]Nelson, The Mormon Village, p. 28

laid out with consistent block and street size, and with lots offset from block to block like those of the Zion Plat so that houses did not face each other across the street. This offset pattern of lots was not common among the smaller communities. However, Goshen, and portions of Lehi, Kaysville, and Farmington were laid out in this manner. The village pattern prevailed over dispersed farmsteads, although dispersed farmsteads were common in Davis and Weber counties north of Salt Lake City. In most villages the lots were large, containing an acre or more and often accommodated a garden, a barn, a corral, or other outbuildings. The villages were located usually on a lower plain where water could be brought by canal and used to irrigate gardens within the village. Streets varied in width, but few streets were less than 99 feet wide and thus allowed room for irrigation ditches. (Francaviglia recognized ditch lined streets as one of the indices for identifying Mormon settlements.) The land around the town which could be irrigated was surveyed and laid off in small farms. Commonly the closest land was surveyed into five acre lots with ten and twenty acre lots further out.[1] These were sometimes included in one large field to reduce the cost of fencing.[2] It was

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[1]Such a pattern is reminiscent of Von Thunen's concentric rings. The pattern here, however, concerned the size of land units rather than land use. Yet there was, no doubt, a change toward more extensive farming with greater distance and larger units. Chisholm, Rural Settlement, pp. 45-66 demonstrates from scattered world-wide examples that such a pattern of decreasing intensity of land use with greater distance from the village center is almost universal. In Salt Lake City, artisans and mechanics, whose functions were mostly urban, were to have the small five acre plats next to the city reducing the travel time necessary to get to their land during off-work hours. Intensively tilled gardens represented the prime land use.

[2]With the exception of Salt Lake City, the author was unable to find plats of these early surveys of farm land. However, the town plats often showed adjacent portions of five acre plats, but seldom extended far enough to include the larger fields. The earliest deed records usually described the land in terms of a lot number in a particular survey, e.g. The Big Field Surveys of Salt Lake City, American Fork, and Brigham City and the Survey of Farming Lands at Provo.

necessary for the farmers to commute to the farm daily. Milk cows were often pastured in common outside the village and watched by herd boys. These boys would pick up the cows in the morning and drive them out to the pasture, stay with them all day, and then as they returned in the evening, deliver the cows to their respective owners.[1]

Such characteristics certainly set these villages apart from the dispersed farmsteads prevalent in the rest of the trans-Mississippean West. While it is inaccurate to think of these villages in terms of one repeating pattern, it would be equally inaccurate to think of them as having no significant similarities. If one is to gain an accurate perception of Mormon Villages, he must recognize both similarities and differences.

Walled Settlements

Although the village pattern of settlement had its origin with Joseph Smith, its inculcation into a generalized system of colonization seems to have been based on the advantages this system offered for meeting immediate needs. Perhaps the greatest motivational force for the initial development of a village pattern of settlements came from the external danger of Indian raids. Since the conflicts between whites and Indians in Mormon settlements were minimal in comparison to white settlement elsewhere on the frontier, it is easy to underestimate the impact that the fear of Indian uprisings had on the planning and construction of Mormon villages. Usually the first buildings constructed in a new settlement were built in the form of a stockade or fort patterned after the one in Salt Lake City. For the first year or so, residences were confined to the fort, but as the population grew and settlers

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[1]Nelson, The Mormon Village, p. 196.

felt more secure, a town would be surveyed either on the site of the original fort or nearby and people moved onto their village lots. Defense was still a major concern. Settlements were advised to build protective walls around them that would provide adequate defense for people and livestock against Indian attack.

In those regions where the first settlers had not built a fort, they were advised to do so after the Walker War of 1853-54. The following excerpt from the journal of Warren Foote is indicative of the wide-spread fear of Indian uprisings and the attention given to the construction of adequate defenses.

> During the latter part of summer and the fore part of fall, the Indians were very troublesome. They stole many horses and killed several whites in the south. The Southern settlements were ordered to fort up immediately and also all the settlements in the territory as soon as practicable. . .Our Ward laid out a fort one mile below our mill, west of the county road leading to Utah Co. It contained 10 acres and is laid of [sic] in lots containing 18 square rods (3 rods by six with 2 streets running East and West). This is to be walled in with adobes or earth ten feet high. Correll [sic] lots are laid off on the outside on three sides. I took one and a fraction lot inside near the northeast corner, and got a house of adobes one story 16 ft. by 33. Many have built in the fort and moved in. It is called Union.[1]

Figure VII shows the plat of Union in 1857. The block in the center is the portion included within the fort.

The Tenth General Epistle of the Presidency of the Church (1853) included the following information:

> Active preparations are now in operation to wall in the cities and all the considerable settlements throughout the Territory. The Twelve Apostles, with few exceptions, have recently received important appointments to the charge of considerable sections of the Territory, and will repair to the

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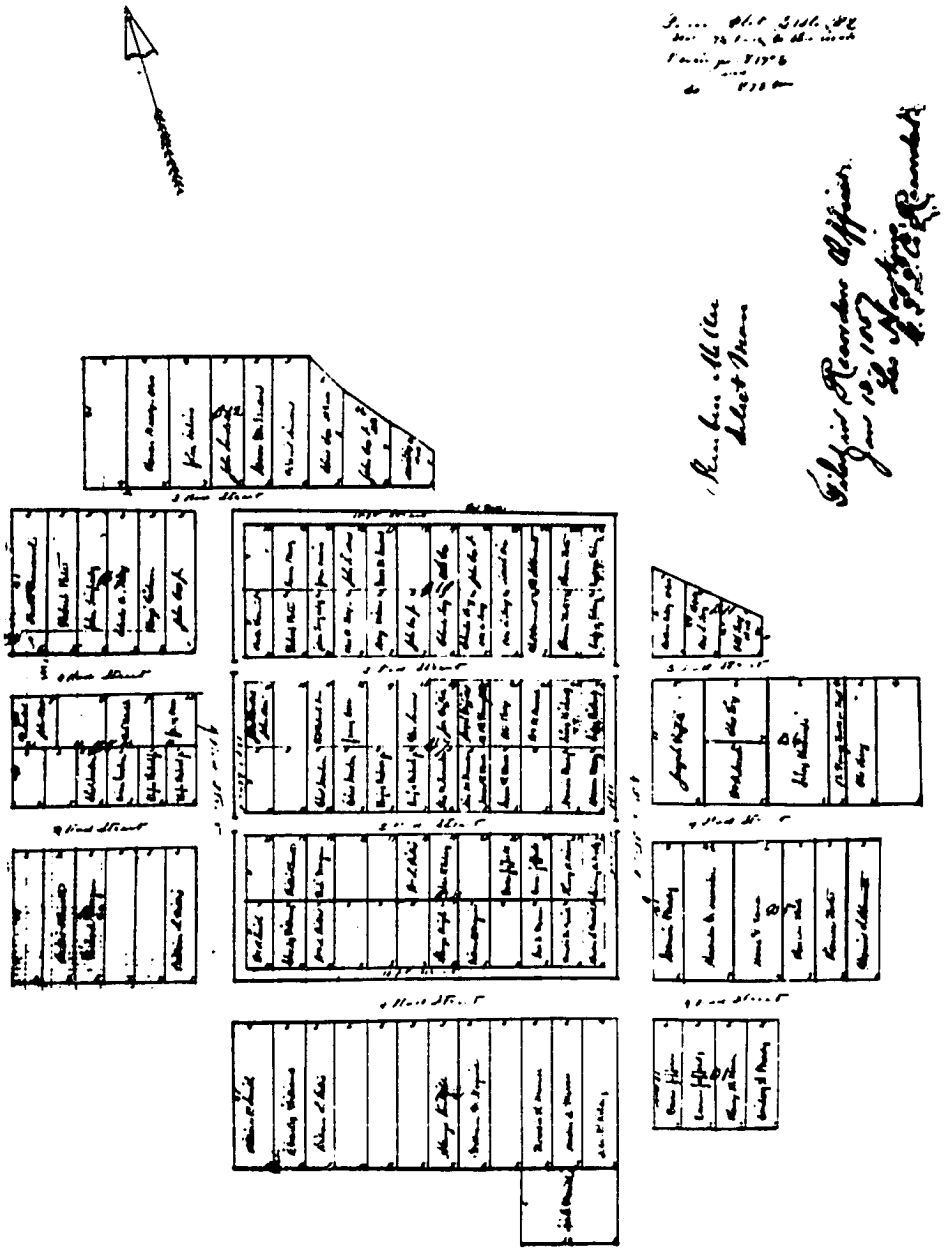
[1]Warren Foote, unpublished diary, L.D.S. Church Archives, MS, July 28, 1847, Vol. 1, p. 132.

REPRODUCTION OF UNION PLAT - 1857



Source:

Salt Lake County Pioneer Plat Book

field of their missions as soon as practicable. And the facilities for instructions to all the cities and settlements through the Territory will be increased by the Twelve officiating personally among the people that dwell in different locations.[1]

The Eleventh General Epistle (1854) indicated the progress being made in the construction of these walls.

> The City Wall (Salt Lake City) is also fast progressing, and it is expected will be finished the present season. Many of the settlements have secured themselves by forting in; but much remains to be done. It is desirable, and we urge it upon all the Saints, to not cease their vigilance, nor their exertions, until their defenses are completed. Although the Indians are quiet, and have been for several months, yet we have no assurance that they will remain so; it therefore becomes necessary for your temporal salvation and the quiet of the territory, that you should be prepared for any emergency that may arise. . .We tell all the Saints in the valleys of the mountains, in the name of Israel's God, if you do not better observe the counsel which is given, and comply with the requirements of your leaders, you will suffer loss, the natural consequence of disobedience. . .
>
> From henceforth let one and all go forth with one accord and build their forts, wall in their cities and villages, herd and guard their cattle and other property, and keep their guns and ammunition in good order and convenience, ready for instant use; and then, when thus prepared and ready at all points to ward off danger, to defend yourselves, and continually guard against surprise, and [if] you meet the Indians, treat them civilly, friendly; endeavor to get speech with, and treat them in a friendly manner; seek to gain their good will, and induce them from their hostility, their savage and warlike feelings, their propensities for theft, shedding of blood, plunder, and to follow the pursuits of peace and civilization. . .[2]

Salt Lake City Wall

The Salt Lake City Wall serves as a good example to illustrate the manner of construction of these walls. It included approximately eight

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[1] Tenth General Epistle of the Presidency of the Church of Jesus Christ of Latter-day Saints, to the Saints scattered abroad throughout the Earth. October 13, 1853, Messages of the First Presidency, ed. James R. Clark, Vol. 2, p. 123.

[2] Eleventh General Epistle of the Presidency of the Church of Jesus Christ of Latter-day Saints, to the Saints. April 10, 1854, Messages of the First Presidency, ed. James R. Clark, Vol. 2, p. 130-131.

and one-half miles of wall and represented a tremendous number of man-hours expended in labor (See Figure VIII). The following report is self explanatory.

To the Honorable Mayor and City Council of Great Salt Lake City:

Gentlemen:

We, the undersigned Committee, appointed at your last sitting on the 23rd inst. to determine the line for the contemplated wall around this city, respectfully present the following:

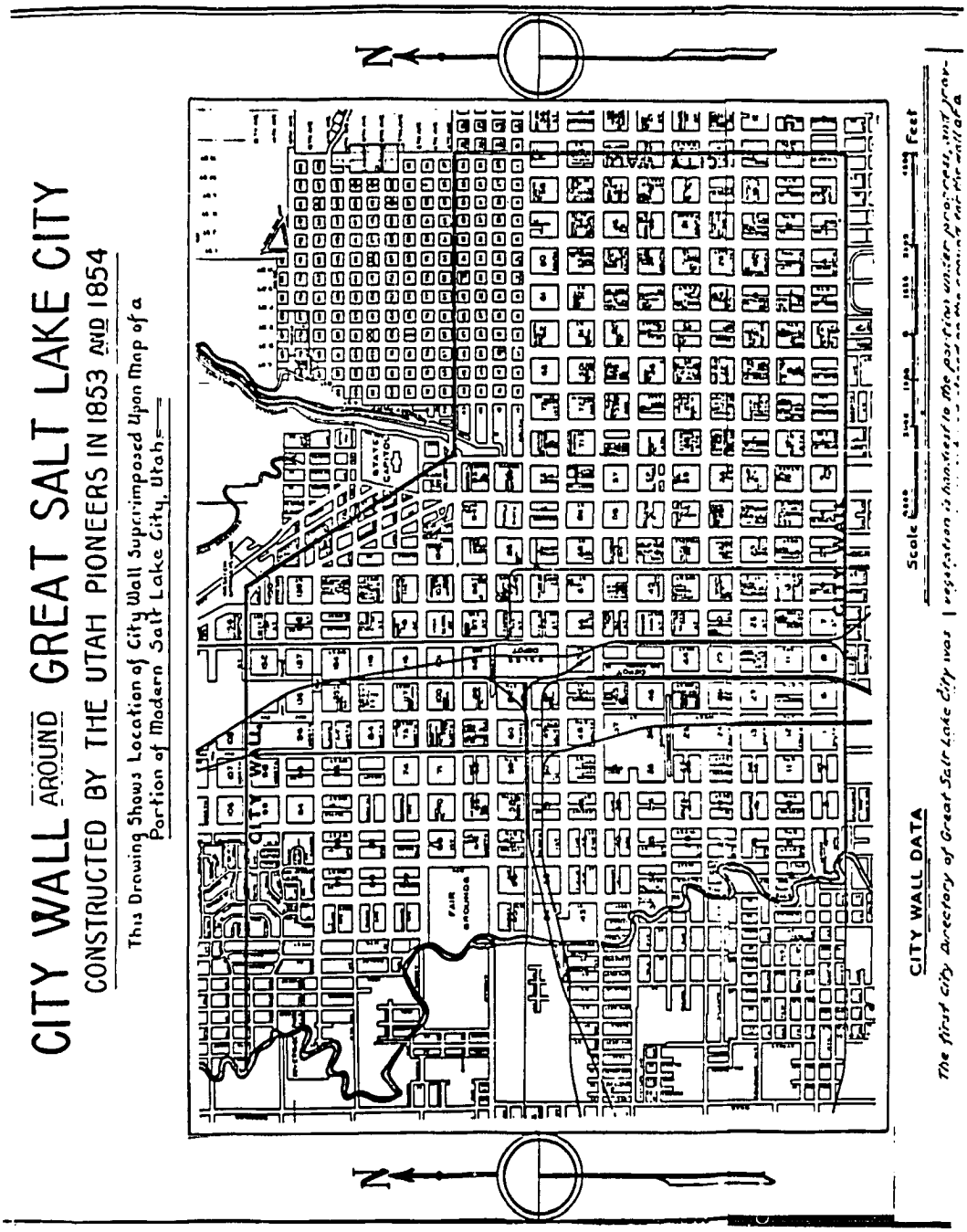
Report

We recommend that the inner line of the wall commence at a point 8 rods south of the southeast corner of Lot 3, in Block 1, of Plot 'B,' thence due north 536 rods, including two blocks and two streets north of the present survey, thence due west about 408 rods to the east line of 1st East Temple Street, thence northwesterly about 287 rods to a point near the northeast corner of the block upon which the public bath house is located, thence due west about 472 rods to the River Jordan, thence up the east bank of said river to a point where said line would intersect the west prolongation of the north line of the Five-Acre lots, thence due east about 1028 rods to the point of beginning; making in all about 2731 rods, exclusive of the west, or Jordan River.

The soil on the south and east lines, and on the line west of the bath house, is very suitable for easy digging and making into wall, though small portions are somewhat swampy. From the northeast corner of the proposed enclosure to the northeast corner of the bath house block, there will be more or less gravel but your committee judged there would be sufficient soil for making mud in the greater part of this portion of the line.

We also respectfully recommend that the inner edge of the wall be on the above described line, and the outer edge be from 20 to 36 inches from the breaking of the ground for the ditch, according to the condition of the soil and inclination of the surface; that the wall be made 12 feet high and 6 feet thick at the bottom, carried up with an equal slope on each face so as to be 2 ½ feet thick at the height of 6 feet, thence carried up the remaining 6 feet 2 ½ feet thick and rounded on the top; that it be made of the earth taken from the ditch, which should be properly moistened, mixed with weeds, sagebrush, small willows, grass, cane, bullrushes, or whatever of like vegetation is handiest to the portion under progress, and gravel where convenient, and placed on the ground for the wall of a depth suited to its consistency, and when the first layer is dry, repeat the operation until the wall is completed; that the ditch be dug large enough

Figure V111


CITY WALL AROUND GREAT SALT LAKE CITY
CONSTRUCTED BY THE UTAH PIONEERS IN 1853 AND 1854
This Drawing Shows Location of City Wall Superimposed Upon Map of a Portion of Modern Salt Lake City, Utah
N
N
CITY WALL DATA
Scale
Feet
The first city directory of Great Salt Lake City was
vegetation is identical to the portion

Source:

Nicholas G. Morgan "Map of City Wall Around Great Salt Lake City," Salt Lake City, Utah. Date unknown. Original map is in the archives of the Utah State Historical Society.

> to furnish the earth for the wall, with proportionate width and depth and properly sloped sides:
>
> Of necessity there must be gates and bastions, and we recommend that there be one gate on the north line, to be on the street next west of the bath house; one gate at City Creek, one where the railroad crosses the line, one on the street that will best accommodate the travel to and from the east, and a sufficient number on the south line to reasonably accommodate the travel into the Big Field and the country south; that half-moon bastions be made in the wall, at distances as near 40 rods apart as the nature of the ground will admit, and at the gates and corners.
>
> . . . . . .
>
> All of which is respectfully submitted by
> Albert Carrington
> Parley P. Pratt
> Franklin D. Richards
> Great Salt Lake City, August 27th, 1853.[1]

Utility of Walls

In the over-whelming majority of cases, the construction of the walls around the villages and cities were unnecessary as far as defense was concerned. The settlements were never attacked. Chandless doubted their utility even in the event of an attack.

> The whole city, except on the south, is closed in by an earthen wall ten or twelve feet high, here and there jutting out into small bastions, and pierced at intervals by gateless gateways. This work is utterly useless, for the line of defense would be nearly ten miles, and can at any part be climbed over with ease, particularly by a barefooted Indian.[2]

The walls may have had some value as a preventive measure discouraging any direct attack on the settlements and no doubt helped to prevent the theft or loss of livestock. Yet it is very doubtful that their usefulness was commensurate with the labor expended in building them. They did, however, help to accentuate village settlement, rather than isolated

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[1]Morgan, "Map of City Wall;" script accompanying map Figure VIII

[2]William Chandless, A Visit to Salt Lake; Being a Journey Across the Plains and a Residence in the Mormon Settlements at Utah (London: Smith, Elder, and Co., 1857), p. 153.

farmsteads. Still, there were apparently a few individuals who always lived outside the villages. Chandless reported that:

> . . .I reached the village of the same name, (Weber) a single street of cottages for some 300 yards in length, with their gardens behind, and the whole enclosed by an earthen wall, with a gateway at each end of the oblong; the wall gave rather a snug look to the place, and against Indians may be effectual. Every place I now discovered was, or was to be, fortified thus, though often there is an outer town, and straggling houses far beyond.[1] (Emphasis added)

Other Advantages of the Village System

In addition to defense there were many other advantages to village settlements. Cooperative effort which was enhanced by this system, was essential in the construction of irrigation canals, roads and public buildings. Schools, religious services, and other social activities as well as commerce all benefited from this system. The advantages of the village system as viewed by Church authorities were summed up in a letter in 1882 to a Stake President in charge of newly established settlements in Idaho.

> In all cases in making new settlements the Saints should be advised to gather together in villages, as has been our custom from the time of our earliest settlement in these mountain valleys. . .By this means the people can retain their ecclesiastical organizations, have regular meetings of the quorums of the Priesthood and establish and maintain day and Sunday schools, Improvement Associations, and Relief Societies. They can also cooperate for the good of all in financial and secular matters in making ditches, fencing fields, building bridges, and other necessary improvements. Further than this they are a mutual protection and source of strength against horse and cattle thieves, land jumpers, etc., and against hostile Indians, should there be any,. . .While the families are gathered in settlements there can be no disadvantage in having the farms outside, within easy reach, as the pecularities of the country may admit, the same as in our older settlements. A spirit to spread far and wide out of sight and reach of the authorities of the Church, must be discountenanced, as all Latter-day Saints must yield obedience to the laws of the Gospel and order of the Kingdom

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[1] Ibid., p. 230

> of God, and a methodical comprehension and intelligent system be inaugurated that we may gain influence (and not lose strength) by strengthening the cords of the Stakes of Zion.[1]

Distribution Pattern of Settlements

Within three years after their arrival in the Salt Lake Valley, Mormon settlers had established--at least in embryo--36 communities along the Wasatch Oasis (see Figure IX). The settlements were distributed in a longitudinal pattern near the base of the Wasatch Mountains and exhibited a fairly high density considering the short colonization period. The importance of water as a location factor in settlement distribution is demonstrated by the proximity of most communities to permanent streams and the absence of settlements on the west side of the valley where such streams did not exist. Yet Figure IX shows that settlements were not always located adjacent to permanent streams and that they appear to be spaced at more uniform distances from one another than the distribution of streams would dictate.[2] Although irrigation water was vital to agricultural development, water could be transported by canal to areas a few miles distance from the stream itself and a few intermittent streams, not shown in Figure IX , had sufficient flow during the spring and early summer to support some agriculture, while springs and wells provided a small but significant amount of water for culinary use. It was hypothesized therefore, that in spite of the dependence upon irrigation,

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[1]Letter, John Taylor and Joseph F. Smith to President William B. Preston and councilors, Logan, Dec. 28, 1882. Messages of the First Presidency, ed. J. R. Clark, Vol. 2. pp. 350-351.

[2]Some indication of randomness in stream pattern was obtained by a reflexive nearest neighbor measurement (Dacy, 1960) of distance between streams along line A-B in Figure IX. The test showed that along line A-B streams were distributed randomly, but the author recognizes that the above findings represent a relatively weak measure of randomness in total stream distribution.

settlements along the Wasatch Front were strongly influenced by cultural forces that led to a rather closely spaced uniform distribution of settlements.

Test for Randomness in the Settlement Pattern

The above hypothesis was tested by a nearest neighbor analysis to determine the extent of randomness, clustering or uniformity of Core settlements in 1850. On the accompanying map, working at a scale of 1:250,000 (approximately four miles to the inch), a template with concentric circles at one mile intervals was placed over each settlement and the radial distance measured to its first, second, third, and fourth nearest neighbor. The results of these measurements are shown in Table II. Settlements were remarkably close together with only two settlements located more than six radial miles from their nearest neighbor and only four settlements at a greater distance than ten miles from their fourth nearest neighbor. A summary of mean distance, variance, and standard deviation are shown in Table III. The variance and standard deviation are relatively low, indicating a fairly uniform distance between settlements.

The expected radial distance to the nth nearest neighbor for a random distribution can be computed with the following test statistic developed by Thompson.[1]

$$E(r_n) = 1/\sqrt{m} \cdot (2n)\,!\; n \,/\, (2^n \cdot n!)^2$$

where m = the density (i.e. N/A where N = the number of settlements and A = the area in square miles), and n = the order of nearest neighbor measurement.

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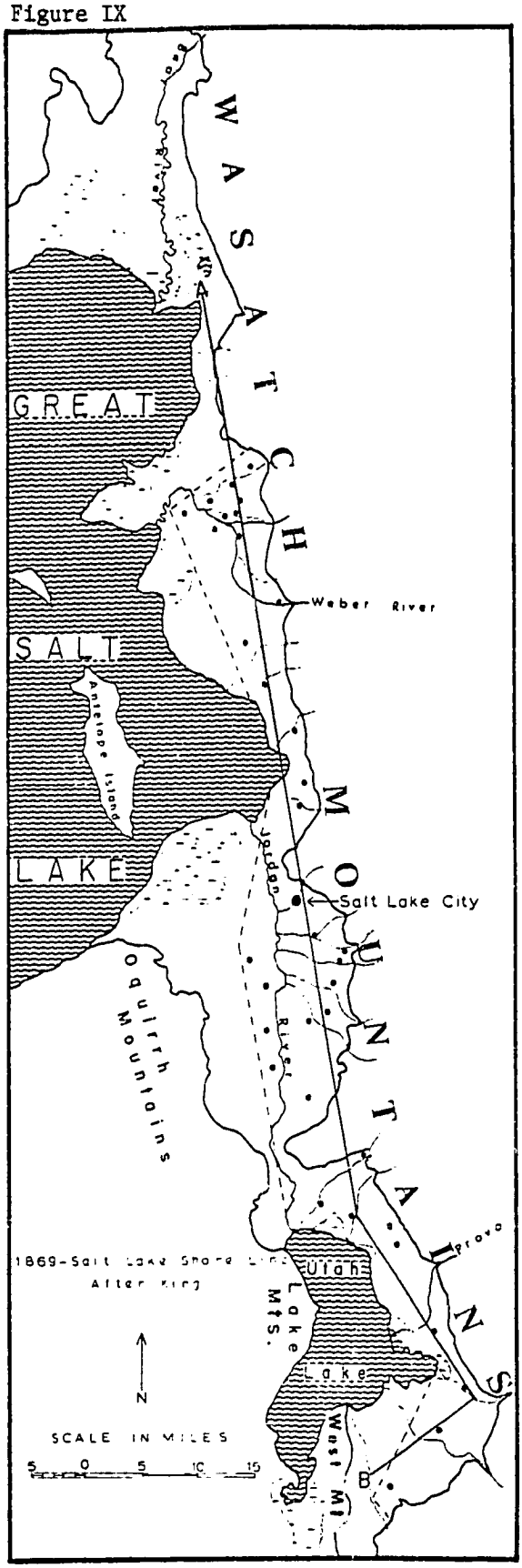
[1] R. H. Thompson, "Distribution of Distance to the Nth Neighbor in a Population of Randomly Distributed Individuals," Ecology, Vol. 37 (April 1956), p. 394.

Figure IX



MORMON SETTLEMENTS IN 1850

ALONG THE WASATCH FRONT

Dashed line represents the northern and western edge of the settled region used to measure the area.

Distance between streams measured along line A--B.

Base Map taken from the Army Map Service 1;250,000 series.

Table II

NEAREST NEIGHBOR DISTANCES
1850

First Order	Second Order	Third Order	Fourth Order
6.6	10.9	13.9	14.0
4.4	6.6	8.5	9.2
4.4	5.6	7.0	11.0
2.0	5.5	8.1	8.4
2.0	7.0	7.1	8.9
1.9	4.8	7.1	7.7
1.9	3.6	6.4	6.6
2.9	3,6	4.9	5.2
2.9	5.7	6.4	7.6
5.3	5.7	6.5	7.0
4.0	6.5	6/8	7.0
2.0	3.9	4.0	5.9
1.9	2.6	4.6	5.5
1.0	2.0	3.0	4.6
1.0	3.9	3.0	5.5
3.0	4.1	3.5	4.4
3.4	6.1	6.5	6.7
2.0	3.0	4.0	4.5
2.0	6.4	8.1	10.9
2.0	4.5	9.1	10.0
4.5	4.9	6.4	8.9
4.0	4.0	7.1	9.1
4.0	4.6	8.8	9.3
4.6	6.6	7.1	7.9
1.2	2.5	2.6	2.9
1.2	1.3	1.8	2.7
1.3	2.0	2.1	2.6
1.4	1.8	1.9	2.1
1.4	2.5	2.8	2.9
1.9	2.4	2.5	2.6
2.7	3.0	3.6	5.0
2.1	2.2	2.3	2.9
2.2	3.4	4.7	4.8
6.2	6.2	6.7	7.4
3.2	4.0	5.9	6.3
3.2	4.0	5.2	7.0
Total 101.7	156.3	200.0	235.0
Mean 2.825	4.3416	5.556	6.5260

Table III

SUMMARY OF MEAN DISTANCE, VARIANCE, AND STANDARD DEVIATION

Order	Sum of Dist.	Mean Dist.	Variance	Standard Dev.
1	101.7	2.8250	2.1200	1.4565
2	156.3	4.3416	3.9356	1.9835
3	200.0	5.5560	6.7626	2.6205
4	235.0	6.5260	7.8763	2.8005

Table IV

OBSERVED AND EXPECTED RADIAL DISTANCE

Order	Observed Radial Distance	Expected Radial Distance	R Value	C Statistic
1	2.825	1.9106	1.4786	3.7661
2	4.3417	2.8659	1.5150	4.4640
3	5.5560	3.5849	1.5498	4.5480
4	6.5260	4.1794	1.5615	3.3451

$N = 36$

$A = 526.60$ measured with a planimeter $\quad m = 36/526.60 = 0.0685$

$\sqrt{m} = .2617$

$Er_1 = 1/.2617 \cdot (2 \cdot 1)! \cdot 1/(2^1 \cdot 1!)^2 = 1.9106$

$Er_2 = 1/.2617 \cdot (2 \cdot 2)! \cdot 2/(2^2 \cdot 2!)^2 = 2.8659$

$Er_3 = 1/.2617 \cdot (2 \cdot 3)! \cdot 3/(2^3 \cdot 3!)^2 = 3.5849$

$Er_4 = 1/.2617 \cdot (2 \cdot 4)! \cdot 4/(2^4 \cdot 4!)^2 = 4.1794$

Randomness can then be tested by a comparison of the observed values (Or) and the expected values (Er) by using the formula: Randomness (R) = $\frac{Or}{Er}$. The R value will vary from 0.0 if completely clustered at one point to 2.15 if completely uniform, which would be analogous to Christaller's Hexagonal Arrangement. A value of 1 indicates a random pattern.

$R_1 = 2.825/1.9106 = 1.4786$

$R_2 = 4.3417/2.8659 = 1.5150$

$R_3 = 5.5560/3.5849 = 1.5498$

$R_4 = 6.5260/4.1794 = 1.5615$

A test for significance in the departure from randomness is given by the statistic:[1]

$$c = \frac{\bar{r}_n - E(r_n)}{(r_n)\sqrt{N}}$$

where $\bar{r}_n$ is the mean of N observed values or r_n. This can be compared with a table of normal distribution values. The c value becomes significant

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[1] Thompson, "Distribution of Distance," p. 392.

above 1.96 at the .05 level and 2,58 at the .01 level of significance.

$$c_1 = \frac{2.825 - 1.9106}{1.4565/\sqrt{36}} = 3.7661$$

$$c_2 = \frac{4.3417 - 2.8659}{1.9838/\sqrt{36}} = 4.4640$$

$$c_3 = \frac{5.5560 - 3.5849}{2.6005/\sqrt{36}} = 4.5480$$

$$c_4 = \frac{6.5260 - 4.1794}{2.8005/\sqrt{36}} = 3.3451$$

These results are summarized on Table IV.

The above results show a significant departure from randomness toward uniformity with all four nearest neighbor measurements. The fact that all four orders show the same trend with little variation verifies the validity of the test and indicates that settlements were located more regularly than if stream pattern had been the major determinant of distribution. Cultural forces must also be reckoned with.

Central Planning and Control

In attempting to examine cultural factors that may have influenced a settlement pattern that tended significantly toward uniformity, one must consider what effect Church planning and control had on the spacing of settlements. Was there a Church policy or plan for colonizing the region and to what extent did Church officials plan, direct, supervise, and control settlements.

The general assessment by students of Mormon history is that Church authorities directed the temporal affairs of their members to an amazing degree. Mormon colonization or settlement was the result of careful planning and direction by Church authorities, particularly Brigham Young,

and the willingness of lay members to respond to a call from their prophet to settle wherever they were requested. It is not difficult to find statements from Church leaders indicating this kind of central planning.

> The city that we have laid down is already filled up and we have many families that are at present without an inheritance and many families are coming in Elders Richards and Lyman's companies. We have deemed it expedient to run off an addition to the city commencing at the eastern line of the city and running east as far as the nature of the land will allow for building purposes.
>
> Not only is this addition necessary but we are going to lay off a site for a city about 10 miles north of our present location and another 10 miles to the south of our city. . . .[1] (italics added)

> You are hereby instructed to proceed forthwith, and make diligent inquiry, to ascertain who in your wards can take into their families, or houses, some of the brethren, or members of their families, who are now on their road to this land, and give them employment and food until the harvest of 1855, and furnish those who may need it, transportation from this city to their several places of destination.
>
> The Saints coming by the Perpetual Emigrating Fund, and others, will doubtless need assistance to enable them to arrive here, you will therefore be on hand to send teams to their aid by the 15th of August. It is desirous that you act not only promptly, but immediately; and without delay make report, at the President's Office, of your doings and ability to do, in the matter of teams, teamsters, and wagons to send out on the road.
>
> Bishop Hunter will see that all the Bishops alluded to, make the desired reports by the 15th of August, that we may know how much we can assist, and where we can send the coming emigration. (italics added)
>
> In hopes of immediate action on your part,[2]

Although historians who have written about Mormon settlement have recognized that Mormon settlers sometimes acted on their own, they have clearly emphasized the role Church leaders in Salt Lake City played in choosing the locations, the site, and personnel for the establishment of

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[1]Letter, Brigham Young to Orson Hyde et. al., Messages of the First Presidency, ed. J. R. Clark, Vol. 1, p. 343.

[2]Letter, First Presidency to the Bishops, June 28, 1854, Messages of the First Presidency, ed. J. R. Clark, Vol. 2, p. 144.

new colonies or settlements. Mormon folklore abounds with stories of individuals who responded to the call of their prophet, usually at great personal sacrifice, to participate in the establishment of a new colony. They gave up the advantages and opportunities of a softer and more prosperous life in an established colony for the rugged pioneer existence in order to help build and expand the "Kingdom of God." Individual gain was secondary to Church loyalty and willingness to respond to the religious imperialism of Mormon leaders.[1]

The general impression of both the layman and the professional historian is that Mormon colonization was carefully planned and supervised by Church authorities who selected the location for most new settlements as well as the bulk of the individuals involved in founding them. The remarkable ability to organize their lay members in almost military fashion is credited with enabling the Mormons to move, successfully, such large numbers of people across the plains and Rocky Mountains in the the Salt Lake Valley. It is assumed that this same degree of organization continued in the colonization of the Great Basin. Wagon trains of new immigrants coming into the valley were met and advised (if not told) where to settle.

This perception of Mormon colonization minimizes the role of individual choice. Individualism was submerged in communalism. Bancroft interpreted this characteristic as being at the root of the Mormon-Gentile conflict, not differences in theology nor even the abhorred practice of polygamy.

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[1] For examples of this accepted view of Church planning and control see Arrington, Great Basin Kingdom, pp. 383-384; Dastrup, "Mormon Colonization," pp. 77-80; L. Nelson, Mormon Village, p. 179; Dutton, "Irrigable Lands" in Report on Arid Lands, p. 142; James, Blossoming Valleys, p. xii; Hunter, Brigham Young the Colonizer, pp. 15, 142-143, and 195-196.

> There is here much more than the religious unity of ancient Israel. As a cooperative association, Mormonism has not its equal in the history of the world. In every conceivable relation, position, interest, and idea; in every sentiment of hope and fear, of joy and sorrow--there is mutual assistance and sympathy. It enters into all affairs, whether for time or eternity; there is an absolute unity in religion, government, and society, and to the fullest extent short of communism, mutual assistance in agriculture, commerce, and manufactures. If a foreign convert wishes to come to America, he is helped hither; if he wants land, farming implements, seed, stock, he is helped to them; trade and manufactures are largely cooperative. And this bond of strength, whether it be called the holiness of saints or the bigotry of fanatics, causes them to be feared and hated by their neighbors.[1]

To Mormon writers, the unity and willingness of the Church laity to follow the direction and counsel of their leaders has been one of the great virtues of the Mormon Experiment. To anti-Mormon writers, it has been one of the greatest vices. The fact that it has been viewed as either a vice or a virtue may have contributed to its over-emphasis.

Historians have focused on the attitudes and designs of Mormon leaders rather than those of the common man. The discourses, correspondence, and official proclamations of Brigham Young and other prominent Church authorities have been the object of much research. When studying particular settlements, researchers have quite naturally looked for the diaries, journals, or other available records of local Church leaders in that community, which would undoubtedly focus attention on Church direction and influence. But how influential was Church direction and control on the individual decisions of the general populace? Was individualism really eclipsed by communalism? Hareven pointed out in her preface to Anonymous Americans that:

> Until very recently, American social history was written

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[1] Bancroft, History of Utah. pp. 369-370.

> from the perspective of the dominant culture. It dealt with elites rather than common people. With institutions rather than social processes, with attitudes rather than experiences. Large segments of the population were ignored or frequently subjected to stereotyping.[1]

That charge is true of much that has been written about Mormon history.

The Role of Individual Choice

Did individual choice play a significant role in Mormon settlement? The choice of location serves as an important index for measuring that role. Did most Mormon settlers select their original and subsequent locations in answer to a call from the Church or did they choose them for reasons of their own? A sample survey of diaries of Mormon settlers can provide a quantitative answer to that question.

Fortunately for students of Mormon history, the first Mormon leaders, aware of the fact that they were at the threshold of a religious movement of great historic moment, encouraged lay members to keep a diary or journal. Oliver Huntington recorded the reasons he began his journal in 1845.

> I write also for a satisfaction to myself to look over my past life, dates and events, and to comply with a requirement, oft repeated by the prophet Joseph Smith--'That every man should keep a daily journal'.[1]

This instruction was repeated by Brigham Young to the saints collecting on the east bank of the Missouri in 1847, in preparation for their trek to the Great Basin:

> Let every Elder keep a journal and gather historical facts concerning the Church and world, with specific dates, and present the same to the Historian; also, let the presiding officer of every emigrating company, immediately on arrival, see that his clerk presents the Recorder with a perfect list of the name of every soul, the number of wagons, teams and

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[1]Huntington, unpublished journal, Bk. 2, p. 2.

> every living thing in his camp, and let all Saints organize at, and travel from the Pottawatamie District, according to the pattern which will there be given them.[1]

Consequently, the events of the Mormon migration to the Great Basin and the subsequent settlement are documented in hundreds of journals and autobiographies. Some of these remain in private hands today, but many of them have been collected in various archives and are now available to the public. The largest collection, which includes 1,095 journals and autobiographies, is found in the L.D.S. Church Archives in Salt Lake City. Other substantial collections of manuscript and/or microfilm copies, are found in the archives at Brigham Young University, Utah State Historical Society, University of Utah, Daughters of the Utah Pioneers Museum, and the Bancroft Library at Berkeley, California.

Very few of these diaries have ever been published. However, Kate Carter, editor for the publications of the Daughters of the Utah Pioneers, has published numerous short excerpts from poineer diaries. A cursory survey of these printed excerpts indicated that only a small percentage of the pioneers were actually called by Church Authorities to settle in a particular locality. Incoming immigrants generally chose their own location. Most of them went where they had friends or relatives, or if they did not know anyone in the Valley, they usually went to the settlements where the leaders of their wagon train lived. One of the benefits of obtaining volunteers from all over the territory to go back to Missouri to assist in bringing new settlers across the plains was that it helped to distribute these immigrants throughout the settlements rather than

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[1] General Epistle from the Council of Twelve Apostles, December 23, 1847, Messages of the First Presidency, ed. J. R. Clark, Vol. 1, p. 331.

having them concentrated in Salt Lake City. It was quite common for young unmarried men to be called to this assignment, which gave them an opportunity to look over the marriageable girls that had newly arrived from Europe or the eastern states. The practice of individuals choosing their own location seems to have begun very early. Huntington, who entered the valley with Brigham Young's company of Spetember 20, 1848 reports:

> On the 22nd H. C. Kimball with his compa ny of 300 wagons came in and camped near where Brigham did, the outlines of whose corell [sic] could only be traced by a few scattering wagons which were left, from the hundred who immediately flew to the shelters of their friends or more eligible situations, where woods and water were more handy.[1]

Sample Survey of Journals

Since Carter's edited excerpts were chosen for their emotional appeal or interest, it was not known if they constituted a representative sample. Furthermore, only small portions of the diaries were included. Therefore, it seemed essential to this writer to do a more systematic survey of early journals. Initially a system of taking a 10 percent sample of all diaries in the Church Archives was begun but proved to be very inefficient as well as a never ending task. Well over half of the diaries checked had no information about settlement in Utah. They frequently covered only the pre-Utah period or the post-1900 period. Often the diary was only maintained for the two years which the author spent on a preaching mission in Europe or elsewhere. Sometimes they consisted exclusively of such items as recipes, homemade remedies, or poetry. It was necessary to find a more practical system of sampling.

Fortunately, six volumes of a Bibliographic Guide to Utah Diaries and Autobiographies containing over 900 entries, currently being prepared

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[1] Huntington, unpublished journal, Bk. 2, p. 36.

for publication by Dr. Davis Bitton of the University of Utah, was completed in typescript form and was available for research purposes at the University of Utah Library. It will contain over 1200 entries when completed. An abstract of each diary or autobiography is included, outlining the contents of the diary and commenting on its historical value or significance. These abstracts were read carefully in order to select those diaries which contained information about settlement. Only about one third (300) of these diaries appeared to have significant settlement information. Since many of these were multi-volume works of hand-written manuscripts, the task of reading them was still insurmountable--two of these journals contained over 40 volumes each. Consequently, the author decided to consider these 300 journals a universe from which a 10 percent random sample (actually 31 Journals) would be read. Each journal was numbered from 1-300; then numbers were selected from a random numbers table to determine which journals to read.

Results of Random Survey of Journals

The primary purpose of this sample survey of journals was to measure the significance of Church direction in determining where people settled and the number of times they moved. Each diary was checked carefully to determine when, where, and why the author chose his original location or moved to a new one. It was assumed that if he had been called by Church leaders to settle a particular place, the author would have considered that call significant enough to record it in his journal. This assumption seems reasonable since those individuals who responded to a Church call to settle in a particular location must have considered that call of great importance, or they would not have gone. It was considered an honor as well as a duty. Many of the diarists explained why they chose to move to

a new locality, but some did not. If no reason was given, it was assumed that they moved as a matter of personal choice.

This system of sampling has certain built in biases, which need to be recognized. By selecting those diaries that contained information about settlement, it is probable that the tabulated results of this survey indicate a greater amount of mobility than actually existed. Those people who were moving would be more apt to write information about early settlement than those who remained in one place. Since maintaining a journal was advocated by Church officials, it is also probable that, as a general rule, these diarists were more Church-oriented than the general populace: this author considered polygamy a key indice for identifying a strong Church orientation. Consequently, each diary was also checked to determine if the author was a polygamist or a wife of a polygamist. The results of this survey are shown in Table V.

There are several significant trends in Mormon settlement indicated in this survey. A very large majority (90%) of Mormons moving to Utah settled first in the Core area--only 10 percent went directly to a frontier community--and slightly over half of those settling first in the Core settled in Salt Lake City itself. Salt Lake City was clearly the regional urban center for the territory. Diarists up and down the Wasatch Front made numerous references to The City (meaning Salt Lake City). They evidently did not consider their own village or town a city.

Church authorities did very little directing of settlement in the Core area. Only three of the 27 individuals locating there were directed to do so by Church leaders and two of these three were working at mills owned by General Authorities. In these cases, location was directly related to their work at the mills. The rest of those in the Core chose their location for

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Table V

STATISTICAL SUMMARY OF SAMPLE SURVEY OF JOURNALS

	Number	Percent
No. of Journals or Diaries Surveyed	31	100
No. of Diarists born in Territory	1	3.2
No. of Diarists who settle First in Core Area (includes those who were children when they arrived)	27	90
No. of these who settled first in Salt Lake City	14	51.9
No. who settled elsewhere in the Core	13	48.1
No. in the Core that chose their Location on advice of Church Official	3	11
No. in the Core where location was a matter of Personal Choice	24	89
No. of Diarists in Core remaining permanently in same Settlement	0	0
Total no. of moves of Diarists in the Core (discounting those temporary moves associated with Utah War and first arrival in the Valley)	46	
Mean no. of moves per Family	1.4	
Maximum no. of Moves	6	
No. of Diarists who settled first on Frontier (includes all settlements outside Core Area)	3	10
No. of Diarists who moved from Core to Frontier	26	84
No. of these who were called by Church Authorities	9	34.6
No. of those who volunteered for a Church call	1	3.8
No. who moved to Frontier by Personal Choice	16	61.6
No. of Total moves within Frontier	66	
Average no. of moves per Family	2.54	
Maximum no. of moves	7	
Number of these moves resulting from Church calls	7	11
Number of these moves resulting from Volunteering for a Church call	1	2.5
Number of these moves resulting from Church advice because of Indian troubles or survey of Utah-Nevada border	4	6
Number resulting from polygamy persecutions	9	13
Number resulting from Personal Choice	45	68
No. of Diarists who lived Principle of Polygamy	17	55
No. of Diarists who fulfilled Preaching Missions	6	20

a variety of reasons. The original place of settlement was chosen most often because of relatives or friends in that locality and subsequent moves resulted usually from dissatisfaction with their economic conditions and a hope that they would be able to better themselves in the new settlement. Individual choice played an overwhelming role in the Mormon Core area.

Even among those moving from the Core to the frontier, 61.6 percent did so as a result of personal choice, while only 34.6 percent were called by Church authorities and one person volunteered for a general Church call. The one who volunteered apparently did so as much for his own benefit, as out of any sense of obligation to the Church.

> In the fall (1861) a heavy call was made to strengthen the Dixie settlements and having no home of my own, I concluded to try my luck in the cotton country. I left my wife in the city expecting to return the next summer for her after having made me a home.[1]

As mentioned earlier, it is probable that this sample of diaries is a biased sample favoring the more Church oriented portion of the general population. Such a bias is substantiated by the fact that 55 percent of those surveyed were living the principle of polygamy--a much higher percentage than for the population as a whole. Estimates of the percentage of polygamists among the Mormons in Utah varies from 8 percent to 20 percent.[2]

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[1]William W. Hammond, unpublished diary, MS (Church Historians Office, Salt Lake City), 1861, p. 15.

[2]The extent to which polygamy (more correctly polygany) was practiced in Utah during the forty years that it was actually promulgated is unknown, since it varied considerably from one time period to another. During periods of religious revival brought on by conflicts with the Gentile world or economic difficulties, the number of plural marriages greatly increased, after which a gradual decline usually occurred. The highest percentage of plural marriages occurred during the Reformation of 1856-1857. Ivins attributes this to the religious fervor of the Reformation. Stanley S. Ivins, "Notes on Mormon Polygamy," Western Humanities Review (1956), p. 231. Arrington, on the other hand, attributes it to the widespread famine of the time and the need to take care of single and widowed women. He thinks that the Reformation itself was probably a response to economic difficulties. Arrington, Great Basin Kingdom, p. 152. See also footnote p. 459. One Church estimate places the highest percentage of Mormons living the principle of polygamy at one time at 3%. Ivins thinks that it may have been as high as 20%. Ivins, "Notes on Mormon Polygamy," p. 230.

Either these estimates are much too low or this sample represents a strongly Church oriented group. The author is inclined to believe the latter. Consequently, there would no doubt be a higher percentage of these people called by Church leaders to settle in a given locality than of the general populace. Thus the percentage (61%) of people moving to the frontier as a result of personal choice is too low. In all probability the actual percentage was much higher. On the other hand, the percentage of those moving as the result of polygamy persecutions is too high. The actual percentage would be considerably less than 13 percent.

In conclusion, this sample survey of diaries has shown that there were a great many changes in residence taking place within the Mormon Core area, from the Core to the frontier, and from one frontier community to another, that were not planned or directed by Church authorities. In the Core area less than 10 percent of the sample population were directed by Church officials to settle in a particular locality. Less than a third of those moving from the Core to the frontier were called by the Church to do so, and less than a third of those moving within the frontier were responding to a Church call. If these Mormon settlers were fulfilling the imperialistic designs of their leaders, most of them were doing so unconsciously, or at least it was a secondary motive. The prime motive for the movement and location of Mormon settlers, like settlers elsewhere on the Western frontier, was the perceived possibility of improvement in economic and social status. Contrary to popular myth, individualism was a potent force on the Mormon frontier.

Spacing of Settlements in the Core

The diary survey demonstrated that Church leaders did not generally direct new arrivals to particular settlements in the Core, but what about

the spacing of settlements? Was there a Church plan to establish settlements at uniform distances from each other? Brigham Young stated in a letter written in October, 1848 that they were planning to lay out a town ten miles north of Salt Lake City and another one ten miles to the south.[1] Hunter states that Young planned to establish towns every ten miles and quite systematically achieved this goal.[2] The facts, however, do not bear out his contention. The average distance between settlements in 1850 was 2.8 miles. There was no settlement, from Payson in the south to North Ogden in the north which was ten miles from its nearest neighbor--the greatest distance (6.6 miles) was between Payson and Spanish Fork. A number of settlements were only one mile apart. If Brigham Young planned to build them ten miles apart, he met with little success.

The author was unable to find any evidence that indicated that settlements were located according to any general plan. It is true that Bountiful was located approximately ten miles north of Salt Lake City, but this was not a matter of Church planning. Perrigrine Sessions chose that location because of its suitable grazing after Brigham Young had returned to Winter Quarters in the fall of 1847. Carr states that:

> Perrigrine Sessions was sent out by President Brigham Young to find grazing land for cattle belonging to the Church. He came north on horseback and located a place about eight or nine miles out on the Jordan River. Upon returning and reporting there was good grazing for the winter, he was ordered to drive cattle onto it. Two days later Perrigrine Sessions and family, Samuel Brown, John Perry, and Hector C. Haight were sent out to make winter homes.[3]

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[1] "A General Epistle from the First Presidency," Frontier Guardian, Vol. 1 (February 7, 1849), p. 4.

[2] Hunter, Brigham Young the Colonizer, pp. 142-143.

[3] Annie Call Carr, "Bountiful," East of Antelope Island. Daughters of Utah Pioneers: Davis County Company (Bountiful: Carr Printing Co., 1948), p. 48.

Sessions, himself, gives quite a different account of the events. He makes no mention of direct instructions given to him by Brigham Young, although he met Young's returning party in Wyoming.

> At the upper crossing of the Platt we met several of the Pioneers on there way back after there families. This gave us fresh courage altho our teams (were) quite feble and hardley able to move the camp. But by the blessing of God, we continued our journey and met the first Presidency of the Church on a stream caled the little sandy. Here we caled a halt and they gave us a brief account of the Valey with many instructions pertaining to the coarse that the camp should persue when we got into the Valey. This was cheering to the camp as we had but about two hundred miles to travil before we could begin to build and inhabit. . .but after a long journey of all most four months we landed in Great Salt Lake Valey on the twenty fourth of September 1847, all well and not a death had been while on the journey in my company of four hundred Souls. Yet several children were born on the way. Stayed with the main camp five days, Then took a herd of cattle and my family and started North. Here I made the first wagon track past the Hot spring that was ever made. Traveled ten miles and camped with the heard of cattle. I had my hands full to take care of the cattle; lived in my wagon as before; the wether fine and but little snow fell. In about a month Father and I had built a house in Salt Lake City or in the fort. . .After this I continued with the herd until spring, then gave up the herd and began to put in a crop of graine.[1]
>
> (Punctuation added but original spelling retained.)

In view of his devotion and loyalty to the Mormon Church, it would seem strange for Sessions not to mention direct personal instructions given to him by the revered prophet Brigham Young.

None of the three settlements chosen for closer examination in Chapter V was selected by Church officials. In these three communities the first settlers selected the settlement sites themselves without regard to any general scheme. In the case of Springville, the founder--William Miller--cleared his plan with Brigham Young but he had already chosen the site for

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[1]Perrigrine Sessions, unpublished diary, MS, L.D.S. Church Archives Salt Lake City, 1847, part B, p. 53.

the new settlement himself. The decision was based on his evaluation of the physical attractiveness of the area rather than conformity to any general Church plan. The first settlers at Brigham City and Kaysville were apparently acting strictly on their own initiative and did not seek Church approval for their settlements.

The Impact of the Village System on the Settlement Pattern

The closely spaced uniform pattern of settlements that developed was not the result of central planning by Brigham Young or other Church leaders. In the present writer's opinion it developed primarily as a natural consequence of the village type settlement. While the village system offered great benefits for defense and social intercourse, it made it necessary for the farmer to commute daily to his field. As the village grew in size, more land was brought into cultivation and some farmers had to travel relatively long distances to their fields. It was impractical to haul or drag farm implements more than a mile or two each day to reach the fields or to haul hay or other farm produce back to the village. Consequently, if the available land near the village was taken up, it was more economical to establish a new settlement nearby rather than commute greater distances from the old one. Canals could be constructed to bring water to land that lay several miles from the major streams.

In those areas of Davis and Weber counties where dispersed farmsteads were the rule, churches and/or schools created a nucleus around which hamlets or villages developed. Again these communities were distributed in a closely spaced uniform pattern which reduced the distance school children had to walk to school each day.

Not all communities shown in Figure IX were true villages or even hamlets in 1850, since the first settlers in many of them had only arrived in the summer or fall of that year. Yet they soon developed into hamlets

or villages for the reasons given above. Individual travel distance was the major cultural factor in determining the spacing of settlements. The fairly uniform linear pattern of settlements that developed along the Wasatch Front resulted from the aggregate choices of many individuals acting on their own rather than from central planning and control.

CHAPTER IV

GROWTH IN THE CORE

Basic to an understanding of the sequence of events and spatial patterns that characterized Mormon settlement, is an analysis of growth patterns that developed as additional settlers filled in the empty or sparsely inhabited regions of the core. How rapidly did the population grow? Was the expansion of numbers dependent primarily on natural increase or immigration? What proportion of the expanding Mormon population remained in the core and what was the basic age and sex structure of that population? What did people do for a living? Did the expansion of settlements occur evenly both north and south of Salt Lake City or were there uneven spatial and temporal surges of expansion? Did the initial uniform spacing of settlements continue throughout the colonization era and did patterns of actual settlement correspond to theoretical patterns? In Chapter IV, the author will focus on these questions in an over-all analysis of growth in the core.

Immigration and Natural Increase

The western migration of Mormons to the Great Basin was part of the mass migration of Americans to their western frontiers. An era of "manifest destiny" and pioneering in the American West had caught the imagination of hundreds of thousands of people from Europe as well as the eastern United States. Through the decades of 1850-1890, there was a virtual population explosion in every western state and territory. Seen in its proper perspective, the immigration of Mormons from Europe and their trek to the Salt Lake Valley was but a small segment of the mass immigration of Europeans to the New World and the lure of the frontier for hundreds of thousands of them.

Nevertheless, the growth of the Mormon population in the Salt Lake Valley was phenomenal. With the exception of gold, nothing attracted such an ethnic variety of peoples in such large numbers to the arid West as this new millenial religion with its doctrine of the gathering. Thousands of Mormon converts in the eastern states and Europe anxiously awaited the opportunity to migrate to the new "Zion" in the Rocky Mountains. They came in unprecedented numbers.

One of the most unusual features of this Mormon migration was the high proportion of females. Women seemed more susceptible to the religious fervor and personal commitments, which Mormonism demanded, than men. Brigham Young once remarked, "One good reason for the practice of plural marriage is that in heaven, there will be so few men."[1] The Statistical Atlas of the U. S. Bureau of the Census (1900) shows three counties in Utah, one in South Dakota, one in Kansas, and two in Texas as the only counties west of the Mississippi to have more females than males. In Utah the difference was slight, but it was sufficient to set Utah's population apart from the typical frontier population elsewhere in the West with its dominance of males.

Mormonism encouraged large families, which, combined with polygamous marriages, resulted in a very high birth rate. The actual birth rate is unknown but it must have approached and perhaps exceeded 50 per thousand, at times, during the 47 years during which polygamy was practiced. The 1880 U. S. Census of Vital Statistics indicates that Utah had the second highest birth rate in the nation at 41.2 per 1,000 population--exceeded

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[1]Newell Knight, "Aphorisms, Maxims, Proverbs & Pithy Sayings of Governor Brigham Young Culled from Official City Records, Salt Lake City, Utah: Salt Lake City Public Library.

only by Arkansas with 42.7 per 1,000. Utah had the highest rate of births per 1,000 women between 15 and 49 years of age--198.9. Arkansas was second with 190.0. These compare with New Hampshire's 71.6 and New York's 93.9. For 1880 the Utah death rate was 15.09 per 1,000 compared with 12.77 in 1870 and 12.54 in 1860. Dr. John S. Billings, U. S. Army Surgeon and author of the introduction to the Vital Statistics volume of the 1880 U. S. census, stated that the rising death rate represented a more accurate enumeration of deaths in 1880 rather than an actual increase in the death rates. However, by comparing the census enumeration with the number of deaths recorded by physicians in two states, Massachusetts and New Jersey, he found the census enumeration still deficient. Projecting this deficiency to the national level, Dr. Billings believed the actual death rate for the nation was about 18 per 1,000.[1] If that projection held true for Utah, Utah's death rate was between 19 and 20 per 1,000.

At the same time, Dr. Billings thought that the number of births enumerated by the Tenth Census was also deficient by 15%--the actual national birth rate being about 36 per 1,000.[2] That would make Utah's true birth rate in 1880 approximately 47.4 per 1,000, rather than 41.2 as recorded in the census. As late as 1915, the Mormon birth rate was 40.2 per 1,000 and had only dropped to 39.4 in 1954, and 27.2 in 1965 according to Church records.[3] The birth rate of Mormons has always been high.

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[1]U.S. Department of Commerce, Bureau of the Census, Tenth Census of the United States, 1880: Mortality and Vital Statistics; Vol. II, Part I, pp. 17-19.

[2]Ibid., Part II, p. 61.

[3]"Compilation of Vital Statistics from the L.D.S. April Conference Report," 1965, Membership Statistical File--Church Historian's Office.

The number of polygamous marriages reached about its lowest ebb in 1881.[1] Thus the number of polygamous marriages was lower at the time of the 1880 census than it had been previously and consequently the birth rate for 1880 is not representative of previous decades. The Mormon birth rate for the 1850-1890 period probably fluctuated between 47 and 50 per 1,000 population. During the same period, the death rate probably fluctuated between 17 and 20 per 1,000, even though the census figures for both rates are much lower. This would result in an annual increase of births over deaths of 28 to 30 per 1,000 or 2.8% to 3.0%--a growth rate which is comparable to that of many underdeveloped countries today.

The actual number of Mormons migrating to the Salt Lake Valley is unknown. The arrival of Church organized immigration companies was usually recorded by the Church Historian, and/or noted in the local newspaper. Some Mormons, however, came in independent companies, with freight companies, or as part of a California or Oregon-bound wagon train and were not recorded by the Church Historian or noted in the newspaper. Andrew Jensen, Church Historian at the turn of the century, estimated that 80,000 pioneers crossed the plains prior to the completion of the railroad in 1869. Of these, approximately 6,000 died enroute.[2] Jensen's estimate of the number of pioneers has been quoted over and over again by historians until it has become firmly rooted in Mormon folklore, but is unquestionably too high. The total population of the Territory of Utah in 1870 was only 86,786, according to the U. S. census. This figure included approximately 15,000 non-Mormons as well as several thousand Latter-day Saints who had

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[1]Ivins, "Notes on Polygamy", p. 232.

[2]Manuscript Histories of Pioneer Companies (L.D.S. Church Archives, Salt Lake City) Vol. 1, p. 1.

arrived via the railroad in 1869 and 1870.[1] With their high rate of natural growth, the Mormon population would have greatly exceeded 100,000 by 1870 if 74,000 Mormon migrants had settled in Utah between 1847 and 1868--particularly since the largest migration occurred in the early 50's, allowing a longer period for natural increase. The 1870 census was probably deficient in its enumeration but not enough to account for that much discrepancy.

Accurate estimates of early Mormon population are hard to find. Mormons, themselves, expressed great optimism about the large numbers of converts migrating to their new "Zion", and the ability of the newly founded communities to assimilate and support them. The fourth General Epistle carried this kind of rhetoric to new heights, even stating that they expected to double their population annually.

> The crops have been abundant in all the settlements of Deseret, this season; and we have made every exertion to have them secured for the benefit of all; and although from the best information obtained we have reason to expect that our population will be strengthened nearly if not quite 15,000 this season. Yet we are confident if all will be prudent there will be seed grain and bread sufficient to sustain the whole until another harvest.
>
> Yes,the estimated population of 15,000 inhabitants in Deseret the past year, having raised grain sufficient to sustain the 30,000 for the coming year inspires us confidently to believe that the 30,000 the coming year can raise sufficient for 60,000 the succeeding year and to this object and end our energies will be exerted to double our population annually by the assistance of the perpetual immigration poor fund and otherwise provide for the sustenance of that population.[2]

The present author doubts that even Mormon leaders honestly expected

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[1]L. P. Brochett, Our Western Empire (San Francisco: Prently Bettesan Co., 1882), p. 1184.

[2]"Fourth General Epistle of the Presidency," Frontier Guardian, Vol. 2, No. 23 (December 11, 1850), p.

to achieve that kind of expansion, but it must have sounded exhilarating to Mormons camped along the Missouri, or waiting in Europe for an opportunity to come. The epistle was also meant to dispel the fears and hesitancy some might have felt about coming. Such statements, no doubt, contributed to inflated estimates of the numbers actually arriving. Furthermore, Utah was anxious for statehood in order to gain autonomy in state government. Mormons tended to exaggerate their numbers in order to strengthen their case. They were accused of counting livestock and unborn babies in the territorial census.[1] More likely, they were counting friends and relatives in the eastern states and in Europe who were planning to migrate in the near future. Whatever they were counting, it was not accurate. The territorial census of 1856 was highly inflated.

On the other hand, anti-Mormon sentiment was high among the Gentile residents of the territory, who were vehemently opposed to statehood and, therefore, wished to minimize the number of people living in the territory. Federal appointments were almost totally in the hands of the Gentiles after 1857, which meant that those responsible for the census may have been inclined to turn in low returns. The problem was summed up well by Burton:

> I found it impossible to arrive at a true estimate of the population. . . the Mormons, desiring to show the 100,000 persons which entitle them to claim admission as a state into the Union, are naturally disposed to exaggerate their numbers . . .On the other hand, the anti-Mormons are as naturally inclined to underestimate: Moreover, as the "census marshals" receive but three halfpence per head, they are by no means disposed to pay a shilling for the trouble of ransacking every ranch and canyon where the people repair for grazing and other

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Richard F. Burton, The City of the Saints (New York: Harper & Brothers, 1862), p. 293.

purposes. The nearest approach to the truth will probably be met by assuming the two opposite extremes, and by "splitting the difference."

> In 1849 Mr. Kelley estimated the Mormons to be "about 5,000 inhabitants in the town, and 7,000 more in the settlements." In 1850 the seventh official census of the United States numbered the inhabitants of Utah Territory at 11,354 free plus 26 slaves-11,380 souls. In 1853 the Saints were reckoned at 25,000 by the Gentiles, and 30,000 to 35,000 by Mr. O. Pratt, in the "Seer." In 1854 Dr. S. W. Richards estimated the number at "probably from 40,000 to 50,000" in the United States, and in Great Britain at 29,797. In 1856 the Mormon census gave 76,335 souls. . . . In 1858 the Peace Commissioners sent to Utah Territory reported that the Saints did not exceed 40,000 to 50,000 souls, half of them foreigners . . .In 1859 M. Remy made the number of Saints in Utah Territory, not including Nevada, 80,000 souls, and the total in the world 186,000. The last official census, in 1860, was taken under peculiar disadvantages. General Burr, of the firm of Hockaday and Burr, was appointed to that duty by Mr. Dotson, the anti-Mormon federal marshal. But as the choice excited loud murmurs, the task was committed to a clerk in the general's store, and deputies for the rest of the Territory were similarly chosen. The consequence is that the Gentile marshal's census of 1860 offers a number of 40,266 free plus 29 slaves-a total of 40,295 souls; while the Mormons assert their Territory to contain from 90,000 to 100,000 and the world to hold from 300,000 to 400,000 Saints.[1]

Estimates of population run consistently higher than the actual enumeration of people by both the federal and territorial census, with the exception of the 1856 territorial census. Church records of membership are even more conservative. Table VI shows these enumerations for the years that they are available. The returns of the territorial census of 1851 which was taken in June before new immigrants began arriving must have missed a number of families, since they were lower than those of the federal census of 1850.

Evidently there were either a considerable number of Mormons who did not have their names on the Church rolls in 1852 or 1853, or Gentiles

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[1] Ibid., pp. 293-295.

Table VI

CENSUS OF POPULATION IN THE TERRITORY OF UTAH

Year	U.S. Federal Census	Utah Territorial Census	Church Membership Record
1848			1,671[1]
1850	11,380		
1851 (June)		11,354[2]	
1852			11,847*
1853			18,206*
1856		76,335[3]	
1860	40,786		
1870	86,786		
1872		105,229[4]	
1880	143,963		105,229**
1890	207,905		141,602**

* Annual Bishop's Report (available only for the year 1852 and (1853) Journal History, Dec. 31, 1852 pp. 1-3; Deseret News, Oct. 15, 1853, Journal History, Oct. 6, 1855 includes Bishop's Reports for all Utah settlements except Salt Lake City.

** Annual Statistical Report (begins in 1878, L.D.S. Church Archives.)

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[1]Journal History of Brigham Young, MS., (L.D.S. Church Archives), 1848, p. 15.

[2]Utah Census File, L.D.S. Church Archives.

[3]Journal History, March 1, 1860, p. 2-3. Also Burton, City of the Saints, p. 294.

[4]Utah Census File, L.D.S. Church Archives.

made up a larger proportion of the population than is usually thought. The Bishops' Reports in 1852 and 1853 are definitely low. The total population could hardly have been less than 24,000 in 1853 and may have been as high as 35,000; yet the Bishop's Report shows only 18,200 Mormons. If that report was complete, a quarter or more of the population was non-Mormon, which seems most unlikely in 1853. Some non-Mormons had been present from the time of the first settlement and their numbers were augmented by California gold seekers who decided to stay in Utah. According to one estimate 3,000 stayed in Utah during the winter of 1849-50, but no doubt, most of them moved on to California the following summer.[1] They probably constituted a small minority in 1853. However, their numbers increased rapidly with the development of mining in the 60's and 70's. Gentiles were thought to number about 15,000 in 1870 and nearly 37,000 by 1880, when they comprised approximately one-third of the population.[2]

Perhaps the most accurate estimates of total population can be computed from the estimated number of immigrants arriving each year. Andrew Jensen compiled (primarily from the Millenial Star) manuscript histories of the incoming immigration companies which usually included the number, if not the names, of those persons arriving in each company. As mentioned earlier, this is not a complete list, since some arrived by other means, but it forms the basis for estimating the numbers that were arriving. From these records and other unknown sources, Jensen compiled a year by year estimate of immigration. Interestingly enough, these estimates total 68,028 rather than the 80,000 that is usually quoted. Jensen's estimates

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[1]Fox, The Mormon Land System, p. 78.

[2]Brockett, Our Western Empire, p. 1184.

of yearly immigration are included in Column I of Table VII. To arrive at plausible estimates of total population, growth rates of 2.8% and 3.0% were calculated for each year and comprise Columns II and III respectively. In all probability, these immigration estimates are quite inflated and thus even the minimum populations indicated on the table are too high. The table is useful, however, because it represents a rather absolute maximum possible population for any given year. Thus in 1856, when the territorial census enumerated 76,335, the population could not have exceeded 50,500 and was most likely several thousand less than that. The table does show that the Phelps estimate of 30,000 and the Pratt estimate of 30,000 to 35,000 in 1853 are within the realms of possibility providing the estimates of immigration are anywhere near accurate, which is doubtful. The Richards estimate of 40,000 to 50,000 in 1854 is beyond the realms of possibility. It appears that the estimates of those Utah immigrants arriving by means other than the Church organized companies are mere guesses. In 1852 for example, Church officials made a strenuous effort to bring all of those saints waiting along the banks of the Missouri to Utah. Twenty-one organized companies came into the valley that summer bringing 4,871 persons--a substantial migration indeed.[1] Yet, Jensen's estimate for that year is 10,000. This author has been unable to find any justification for such a high estimate. It seems highly improbable that the number coming into the valley independently would exceed the number coming in with this highly organized effort.

The most accurate estimates of immigration and total population must rely on the recorded number of people arriving via Church organized

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[1] "Manuscript Histories of the Pioneer Companies," MS, Vol. I Introduction (L.D.S. Church Archives, Salt Lake City, Utah).

Table VII

TERRITORY OF UTAH

SUMMARY OF CALCULATED POPULATION DATA, 1847-1870

Year	No. Immigrants (Jensen Estimate)	Total Pop. Based on 2.8% Growth	Total Pop. Based on 3.0% Growth
1847	2,000	2,056	2,060
1848	4,000	6,226	6,241
1849	3,000	9,384	9,428
1850	5,000	14,786	14,861
1851	5,000	20,340	20,477
1852	10,000	31,190	31,391
1853	2,603	34,739	35,014
1854	3,167	38,967	39,326
1855	4,684	44,873	45,330
1856	3,756	49,682	50,559
1857	1,994	53,125	54,729
1858	179	54,794	55,929
1859	809	57,160	58,337
1860	1,409	60,208	61,538
1861	1,959	63,908	65,402
1862	3,599	69,356	71,071
1863	3,646	75,046	76,959
1864	2,697	79,919	82,045
1865	1,301	83,494	85,846
1866	3,333	89,252	91,854
1867	660	92,430	94,289
1868	3,232	98,340	100,447
1869	2,426	102,873	105,959
1870	2,246	108,385	111,637

"Manuscript Histories of the Pioneer Companies," Vol. I, Introduction (L.D.S. Church Archives, Salt Lake City, Utah).

companies. Fortunately, the Church Historian's office prepared a summary report in 1971 of each immigration company arriving in the valley prior to the railroad, indicating the leader of the company and the number of persons included.[1] It is the most accurate record yet compiled. Table VIII gives the number of immigrants arriving each year in Church organized companies. It is the opinion of this writer that the number of immigrants arriving independently of the organized companies was relatively small. Furthermore, not all migrants arriving in Utah remained there. Some were lured on to the gold fields of California, some became disillusioned and returned to the states, and some colonized areas outside of Utah. Thus the number of those uncounted immigrants coming into the valley would be partially offset by the number that were leaving. The estimates of the total population for each year in Table VIII were thus computed by adding a 10% increase to each year's known immigration. This figure appears to be a reasonable over-all estimate of the uncounted immigrants when considering the number of people that also left the territory. The 2.9% growth rate would also be low for some years, but is probably high for others and seems to represent a reasonable estimate of the mean growth rate. Consequently, in the opinion of the author, Table VIII represents the most accurate estimates of Utah's yearly population yet available for the pre-railroad era. The estimates consistently exceed the U. S. census enumerations, but the differences are slight. In 1850, Table VIII is .3% higher than the U. S. census, 15% higher in 1860 and 12% higher in 1870. Thus the U. S. census verifies the accuracy of Table VIII and vice versa.

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[1] Ibid. This summary relied mostly on Jensen's Manuscript Histories of Pioneer Companies and Kate Carter.

Table VIII

ESTIMATED POPULATION OF UTAH TERRITORY 1847-1870

Year	Recorded* Immigration	Recorded** Immigration Plus 10%	Total Population** At End of Year Based on 2.9% Growth
1847	1,637	1,801	1,853
1848	2,408	2,649	4,633
1849	2,004	2,204	7,035
1850	3,692	4,061	11,418
1851	3,000	3,300	15,145
1852	4,871	5,358	21,098
1853	2,798	3,078	24,877
1854	3,086	3,395	29,064
1855	2,017	2,219	32,190
1856	3,081	3,395	36,611
1857	1,414	1,555	39,273
1858	179	197	40,615
1859	1,441	1,585	43,424
1860	2,087	2,296	47,046
1861	3,641	4,005	52,531
1862	5,031	5,534	59,749
1863	3,625	3,987	65,584
1864	2,474	2,721	70,286
1865	300	330	72,664
1866	3,126	3,439	78,310
1867	500	550	81,147
1868	3,958	3,354	87,981
1869	2,321***	2,785	93,398
1870	910***	1,091	97,229

* "Manuscript Histories of the Pioneer Companies," Vol. I Introduction (L.D.S. Church Archives, Salt Lake City, Utah).

** Calculations by the Author.

*** After completion of Railroad, accurate records were not kept. This figure represents the total of European Immigrants leaving Liverpool. They were thus increased by 20%.

It appears that the Gentile estimates of the population--25,000 in 1853, and 40,000 to 50,000 in 1858--were fairly accurate, while the Mormon estimates--30,000 to 35,000 in 1853, and 90,000 to 100,000 in 1860[1]--were grossly exaggerated--particularly the latter. The U. S. census of population in 1860, which indicated a population of 40,786, was in reality fairly accurate, although it received much criticism in Utah at the time and was thought to be much too low by Burton[2] and later by Bancroft.[3]

After 1869, with railroad transportation available, the Church ceased organized migration. Utah immigrants secured their own transportation and arrived individually by rail; consequently, there is no record of the number arriving after the completion of the railroad. Subsequent decline in the total population growth rate indicates that the rate of migration to Utah also declined.

Foreign Immigration

A significant proportion of Utah immigrants came from foreign countries, particularly Europe,where conversion to Mormonism was almost tantamount to migration to the United States. The call for new converts to move to America and a well organized immigration system must have added to the appeal of Mormonism, as thousands of new converts, especially from Great Britain and the Scandinavian countries, migrated to Utah. In the fall of 1849, under the direction of Brigham Young, a revolving fund (The Perpetual Emigration Fund) was established to assist immigration. Donations to this fund were solicited throughout the Church. The original purpose was to

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[1]Burton, City of the Saints, p. 294.

[2]Ibid., p. 295.

[3]Bancroft estimated the population in 1860 at 65,000. Bancroft, History of Utah, p. 484.

assist remaining refugees scattered through Missouri and Iowa, to Utah, but it soon became the primary means of assisting immigrants from Europe to migrate to Utah as well. P.E. agents were established in most of the major port cities of Europe to organize immigrating companies and book passage to America for them.

The Perpetual Emigration Fund offered various degrees of assistance. For Mormon immigrants who could afford to pay their own fare, the P.E. agent acted only as the organizing and booking agent to secure passage. For those who could pay part of their expense, P.E. funds afforded supplemental help; and for those who were unable to pay any of their expenses, P.E. funds paid their complete fare. When these new immigrants became settled in Utah, they were supposed to pay back the money that had been spent on their behalf.[1] Of course, many of them were unable to do so and a few, perhaps, had never intended any repayment. The fund was supplemented by donations throughout its history of operation.

Some European immigrants, who were not converts to Mormonism, took advantage of the Mormon organization and arranged to migrate under its auspices. These Gentile immigrants tend to inflate the figures of Mormon Foreign Immigration shown in Table IX, but probably made up a very small minority and may be included in the category "Missionaries and others." Of course it should not be assumed that the number of European Mormon immigrants arriving in the United States from Europe could be added to Utah's population. In 1883, Utah had a foreign population of 54,615, which is considerably less than the total number, 78,225, who migrated to America

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[1]Arrington, Great Basin Kingdom, p. 97-106.

Table IX

MORMON IMMIGRATION FROM ABROAD

1848. 754	1859-60. . . .2,433	1873. 2,537
1849. 2,078	1861-62. . . .5,556	1874. 2,006
1850. 1,612	1863. 3,646	1875. 1,523
1851. 1,370	1864. 2,697	1876. 1,184
1852. 760	1865. 1,301	1877. 1,532
1853. 2,626	1866. 3,335	1878. 1,864
1854. 3,167	1867. 660	1879. 1,514
1854 1/2. . . 500	1868. 3,232	1880. 1,780
1855. 4,294	1869. 2,300	1881. 2,293
1856. 3,583	1870. 917	1882. 1,775
1857. 2,181	1871. 1,500	1883. 2,460
1858. . . . . none	1872. 1,631	

Total -	72,551
Missionaries and others - - - - - - - - - - - -	5,674
Grand Total - - - - - - - - - - - - - - - - - -	78,225

Robert W. Sloan, Utah Gazetteer & Directory of Logan, Ogden, Provo and Salt Lake Cities for 1884, (Salt Lake City: Herald Printing & Pub. Co., 1884).

as indicated in Table IX.[1]

New immigrants usually came into the United States at New Orleans and sailed up the Mississippi and Missouri rivers to Kanesville (Council Bluffs, Iowa). Here they were outfitted with ox teams, wagons or handcarts for their trek to the Great Basin. Some immigrants came via New York City and traveled by rail as far as Chicago, completing their journey to Kanesville by wagon. Others stopped to work for several months or even years in eastern states before migrating on to Utah. William Richardson, a Mormon convert from a coal mining district of northern England, serves as an example. He emigrated to the United States in 1857, but lacking sufficient funds to complete his trip to Utah, worked for several years in various coal mines in Pennsylvania before continuing his journey. His diary account includes numerous references to other Mormon miners whom he met at nearly every mine where he worked, who likewise were waiting to obtain sufficient funds to enable them to complete their migration to Utah.[2]

The Mormon emigration from Europe fluctuated from year to year but remained high for the first two decades after the establishment of Salt Lake City. From 1850 to 1860 inclusive 22,526 European Mormons immigrated to the United States, and 23,644 followed suit the succeeding decade. After that the numbers began to decline; 17,071 comprised the emigration

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[1] Robert W. Sloan, ed. Utah Gazetteer and Directory of Logan, Ogden, Provo and Salt Lake Cities for 1884, (Salt Lake City: Herald Printing and Publishing Co., 1884), p. 295.

[2] Richardson, unpublished diary, MS, L.D.S. Church Archives.

from 1871 to 1880.[1]

The bulk of these immigrants made their way to Utah, where they constituted a substantial portion of the adult population and added to the complex processes of acculturation that were taking place as a distinctive Mormon culture emerged. The foreign born constituted about 32% of the total population in 1860, 38% in 1870, 30% in 1880, and 34% in 1890.[2] These percentages hardly give an accurate picture, however, since nearly half of the population was under fifteen years of age, and thus accounted for a substantial proportion of the native born. The 1880 census breaks the nativity of the population down into each age group. While the foreign born comprised only 30% of the total population, they constituted 57% of those over twenty years of age and 68% of those over thirty years of age. Thus Mormon society in Utah was highly cosmopolitan with strong European influences. Furthermore, the majority of these European immigrants came from industrialized urban districts rather than rural areas and possessed little or no farming experience. The assimilation of these diverse peoples into a rural society based on irrigation agriculture represented a significant achievement. It did not occur without social and/or economic stress. Many individuals did not turn to farming upon arriving in Utah. According to the U. S. census tabulations, the percent of employed people working in agriculture constituted only 50.11% in 1850, 54.06% in 1860, 48.46% in 1870, 36.32% in 1880 and 29.87% in 1890.[3] Only about half of the working population were employed in non-agricultural pursuits during the first

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[1]See Table IX.

[2]Computed from U. S. population census data for the years indicated.

[3]Computed from U. S. population census data.

two decades, when one would expect urban functions to be minimal and agricultural expansion to be maximized. By 1890 only 29.87% were employed in agriculture.

Proportion of Population Living in the Core

Although colonization of outlying regions began soon after the arrival in Salt Lake City, the majority of Utah's population remained in the Core. The five counties along the Wasatch Front--Utah, Salt Lake, Davis, Weber, and Box Elder--accounted for 91.05% of the territorial population in 1850, 68.86% in 1860, 54.98% in 1870, 51.64% in 1880, and 57.74% in 1890.[1]

The declining percentage of people along the Wasatch Front between 1850 and 1880 indicates that colonization beyond the Core was heavy since the actual population of Wasatch Front counties increased from 10,316 to 74,344 during that same period. However, by 1890, urbanization had reversed that declining trend; consequently, the percentage of population along the Front compared to the total population of the territory began to increase as migration to the frontier declined and many people moved from the frontier to the Core to seek better employment.

Characteristics of the Population

Age and Sex Structure

To obtain an accurate analysis of population characteristics along the Wasatch Front, twelve settlements (see Figure XII) were selected for detailed study. They included several small villages as well as larger

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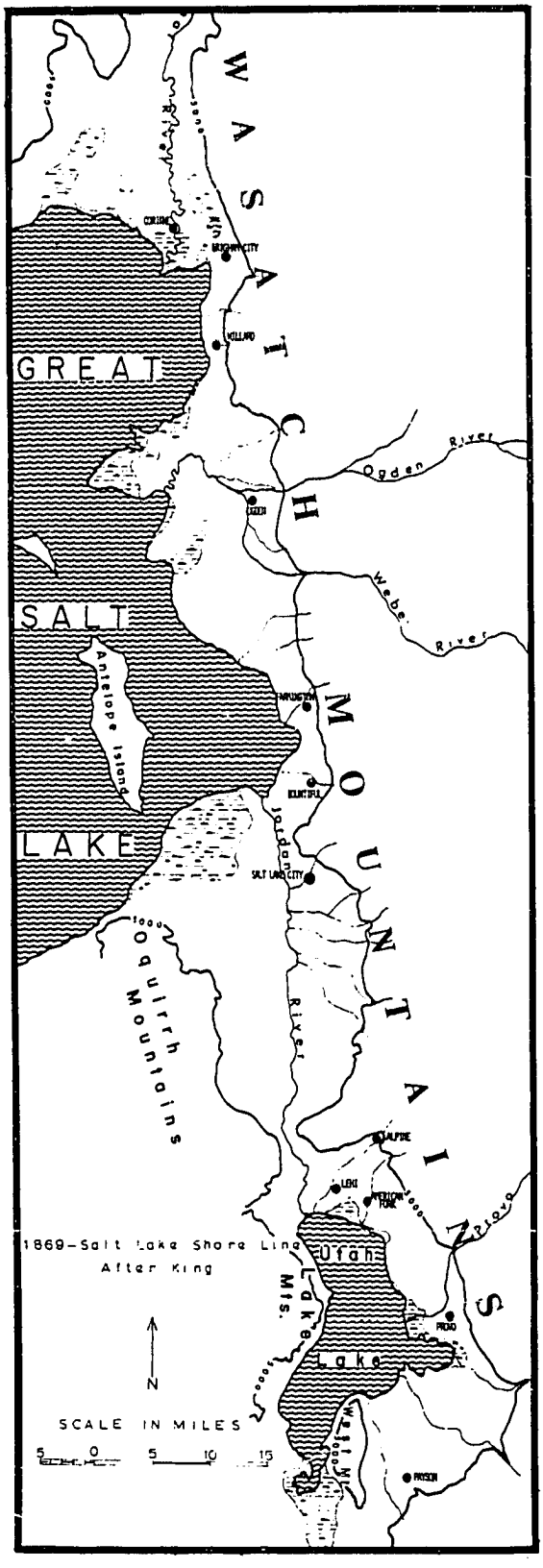
[1]Ibid., 1850-1890.



SELECTED SETTLEMENTS
ALONG THE
WASATCH FRONT
CHOSEN FOR ANALYSIS
IN THE 1870
U.S. CENSUS SCHEDULES

towns and were selected at frequent intervals along the front in order to represent the entire Core area. The published compendium volumes of the U. S. census do not give a breakdown of the age, sex, occupation and nativity of the population by town. Therefore, in order to tabulate the above information by town, it was necessary to examine carefully the manuscript population census schedules which list each resident of the territory by name along with his race, sex, age, occupation and place of birth. The 1870 census year was chosen because it marked the approximate mid-point between the first settlement in 1847 and statehood in 1896. In addition, 1870 marked the end of the pre-railroad era. The railroad had been completed in 1869, but had not had time to greatly affect the basic population structure of individual settlements except those towns or cities where railroad construction workers comprised a significant proportion of the population. Ogden and Willard had small minorities of Chinese laborers employed by the railroad company while Corinne, the epitome of a railroad town, had only come into existence the year before and was completely dependent on the railroad. Most of the settlements along the front, however, had not experienced much impact by the railroad in 1870 as far as their social structure was concerned. They had been in existence for nearly twenty years and their internal social and economic structure had had sufficient time to solidify.

Table X provides a synopsis of the age and sex structure of these relatively mature core communities. Corinne in the north was the only new community as well as the only non-Mormon settlement, since it was founded with the completion of the railroad the previous year. Located at the mouth of the Bear River near Promontory, where the Union Pacific and the Southern Pacific joined to complete the first transcontinental

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Table X

SUMMARY OF AGE, SEX, CHARACTERISTICS OF THE POPULATION OF SELECTED SETTLEMENTS ALONG THE WASATCH FRONT
COMPILED FROM THE 1870 MANUSCRIPT U.S. POPULATION CENSUS SCHEDULES

Town	Total	Male	%	Female	%	15	%
Alpine City	208	107	51.4	101	48.6	106	51.0
American Fork	1,115	556	49.9	559	50.1	583	52.3
Bountiful	1,516	755	49.8	761	50.2	748	49.3
Brigham City	1,312	656	50.0	656	50.0	639	48.7
Corrine	777	588	65.4	269	34.6	175	22.5
Farmington	896	459	51.2	437	48.8	434	48.5
Lehi	1,058	522	49.3	536	50.7	528	49.9
Ogden	3,200	1650	51.6	1550	48.4	1610	50.3
Payson	1,436	721	50.2	715	49.8	664	46.2
Provo City	2,384	1207	50.6	1177	49.4	1182	49.6
Salt Lake City	12,910	6950	50.3	6860	49.7	6420	46.5
Willard	552	295	53.4	257	46.6	247	44.7
Mean %			51.9		48.1		46.6

railroad, it became a freighting center for wagon freight from Idaho, Montana and northern Utah. Ores were shipped by wagon from as far away as Butte, Montana, and by boat from mining districts near the southern end of the Great Salt Lake to Corinne's newly established smelter. Corinne was the focal point of Gentile activity in the territory and early promoters had great faith in its future growth. Corinne's residents petitioned Congress to establish Corinne as Utah's new territorial capital to replace Salt Lake City.[1] They hoped to make it the "junction city" for the rail line. Mormon Church officials, however, preferred not to have this major function located in the "Gentile City" which did not offer direct connections with Salt Lake City. Brigham Young was successful in acquiring 133 acres of urban land at nominal cost in Ogden, which he offered free to the Union Pacific Railroad if the Union Pacific would establish its major depot and service yards there. This offer was accepted and Ogden became the "junction city" rather than Corinne.[2]

Perhaps the most striking characteristics of the other eleven settlements shown in Table X is their uniformity. The variation in the sex ratio was extremely slight except for Corinne. Willard had the highest percentage of males with 53.4% (this included 31 Chinese railroad construction workers) and the lowest was Bountiful with 49.8%. The percentage of children under 15 years of age also varied only slightly throughout the eleven Mormon settlements. The highest was American Fork with 52.3% and the lowest was Willard with 44.7%, which was affected slightly by its small minority of single railroad workers. The uniformity in age and sex

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[1]Bernice Gibbs Anderson, "The Gentile City of Corinne" Utah Historical Quarterly, IX, 1941, p. 141.

[2]Arrington, Great Basin Kingdom, pp. 264-265.

structure throughout the core settlements is indicative of the importance Mormons placed on family life and the stabilized social structure of the population in each settlement in 1870.

Age Structure

Not only was the percentage of children under 15 remarkably uniform throughout the core, it was also surprisingly high. Two settlements--Alpine City and American Fork--had slightly over half of their population in this age group and the other settlements approached 50%. The one major exception to the rule was the Gentile city of Corinne where only 22.5% of the population fell into this category. The predominance of males and the low percentage of children clearly distinguishes Corinne from the Mormon settlements. The mean percentage of persons under 15 years of age for all of the settlements was 48.1%--a higher ratio than that of most underdeveloped countries today. In comparison, the percentage of population under 15 years of age in Latin America today is 42%, in Africa 44%, in Asia 40%, in Europe 25% and in the United States 29%. Only six countries--Togo, Iraq, Costa Rica, Rhodesia, Nicaragua and Ecuador--reach 48% which was only the mean for the 1870 Mormon Core communities.[1] In earlier years the percentage of children was even higher. The 1855 Bishop's Report included the number of children under 8 years of age for 32 Utah communities (excluding Salt Lake City). The mean ratio of children under 8 to the total population was 32% and varied from a high of 46% in Box Elder to a low of 20% in Manti. Only 11 of the 32 settlements had less than 30% of their population under 8 years of age.[2]

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[1]"1972 World Population Data Sheet," Population Reference Bureau, Inc.

[2]Calculated from data taken from the "1885 Bishop's Report," Journal History, October 5, p. 2.

The high percentage of children in these early Mormon communities combined with a fairly high proportion of women must have placed a heavy burden on the wage earning population. Of course in a rural setting, children were counted as hands as well as mouths and no doubt contributed a significant amount of labor to the family livelihood. Virtually every family had a vegetable garden that accounted for a substantial portion of its diet. Still in many of these settlements less than half of the working population were engaged in agriculture. For non-agricultural families, such a high proportion of children must have strained their ability to provide adequate food, clothing and shelter.

The high proportion of children also meant that a high growth rate would be maintained as these children reached the child bearing ages. There would be a continual need for expanding employment opportunities in the cities and/or expanding irrigation facilities to bring more land under cultivation in order to accommodate the growing number of young native farmers as well as the continual influx of immigrants. It also meant that there was a great need for public schools, and a rather narrow tax base on which to support them.

Twenty Year Analysis of Age and Sex Structure

In order to gain a better picture of possible changing trends in the nature of the population, the author thought it would be useful to compare the population of 1870 with that of the previous and subsequent decades. Therefore, a comparison table was constructed to include data from the 1860 and 1880 census schedules. To reduce the task of tabulating this additional data, a ten percent random sample of each page in the manuscript census schedules was taken. A random selector was constructed consisting of an index card attached to a block of wood upon which a circle was divided

into 40 equal parts (50 equal parts for the 1880 census), since that was the number of names on each page. A pointer was then attached to the center of the circle with a thumb tack allowing the pointer to spin freely. Since the names were numbered on each page, the units of the circle were numbered from 1 to 40 allowing the researcher to spin the pointer and select the name identified by the number where the pointer stopped. In the event that the pointer stopped twice on the same number, which occasionally happened, the pointer was respun to avoid counting the same person twice. The results of this tabulation are included in Table XI.

Several generalizations are evident in Table XI. (1) The ratio of males to females remained relatively stable throughout the twenty year period, with the mean ratio varying only two percentage points. (2) The average population for the 12 communities nearly doubled between 1860 and 1870 but increased only slightly during the following decade. Although spatial patterns of growth will be discussed in greater detail later in the chapter, it should be noted that Salt Lake City, Ogden and those communities in between (Bountiful and Farmington) grew more rapidly during the decade of the 70's than did those communities in Utah County--no doubt a reflection of the greater impact of the railroad in the north. (3) While the percentage of the population under 15 was remarkably high in 1870, it was even higher in 1860 but gradually declined from 52% in 1860 to 44% in 1880. Only two communities--American Fork and Payson--experienced an increase in the percentage of children over the two decades. (4) At the same time the percentage of children under 15 years of age was declining, the average age was increasing. It rose from 19.37 years of age in 1860 to 23.0 in 1880. Only one community--Payson--experienced a decline in the average age which was due to its unusually high average

Table XI

SUMMARY OF AGE AND SEX DATA OF SELECTED TOWNS AND CITIES ALONG THE WASATCH FRONT
1860-1880

COMPILED FROM MANUSCRIPT U.S. POPULATION CENSUS SCHEDULES

	Percent Males			Percent Females			Total Population			Percent under 15			Mean Age	
Towns	1860	1870	1880	1860	1870	1880	1860	1870	1880	1860	1870	1880	1860	1880
Alpine	41	51	40	59	49	60	135	208	319	56	51	39	18.6	27.6
Am. Fork*	56	50	49	44	50	51	695	1115	1825	52	52	57	19.6	20.4
Bountiful	48	50	46	52	50	54	866	1517	1617	48	49	44	20.3	21.0
Brig. City	50	50	46	50	50	54	975	1312	1877	58	49	47	17.4	22.7
Corinne**	--	65	46	--	35	54	--	777	277	--	23	43	--	26.9
Farmington	41	51	46	59	49	54	586	896	1073	50	49	42	17.39	23.2
Lehi	51	49	52	49	51	48	831	1058	1490	47	50	46	21.17	21.2
Ogden	56	47	53	44	53	47	1463	3190	5246	54	46	39	19.05	21.3
Payson	45	50	51	55	50	49	830	1432	1788	43	46	46	23.19	20.4
Provo	58	51	51	42	49	49	2030	2384	2432	53	50	41	19.31	23.2
Salt Lake	51	50	46	49	50	54	8190	12910	20768	50	47	39	20.38	24.7
Willard***	52	53	57	48	47	43	627	552	412	63	45	45	15.63	23.1
Mean	50	51	49	50	49	51	1564	3113	3348	52	46	44	19.87	23.0

1860 and 1880 data based on 10% random sample. 1870 data represents total population except Ogden and Salt Lake City which were also based on 10% random sample. Salt Lake City in 1880 based on 2% random sample.

*American Fork is listed as Lake City in 1860.

**Corrine did not exist in 1860.

***Willard in 1860 includes all people utilizing the Willard Post Office. The census did not identify Willard City.

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in 1860 (23.19). By 1880 Payson's average age was not distinguishable from that of other settlements. Perhaps the most significant fact about the average age was not that it was increasing through the years, but that it remained as low as it did. When the average age of the population remains under 25, one can expect a continual population explosion since the majority of the population is either in or approaching the child bearing ages.

Nativity

Table XII shows the place of birth for the residents of each of the twelve settlements in 1870. There was considerably more variation between settlements in respect to the nativity of the population than with the age and sex structure. The native born comprised on the average 65.6% of the total population, but it varied from 57.2% in Alpine City to a high of 76.8% at Farmington. This is a variation of 19.6 percentage points compared with a variation of 7.6 percentage points between the highest and lowest settlements in the percentage of their population under 15 years of age, while the ratio of males to females varied only 3.6 percentage points.

Yet the most striking feature about the ratio of foreign born to native born is not the variability among communities, but rather the uniformity. The native born comprised approximately two-thirds of the population in nearly every community. Of these native born, approximately two-thirds or more were born in Utah which meant that most of them were under 21 years of age. The first settlers had only been in the valley for 23 years at the time of the 1870 U. S. census and the bulk of the population much less than that. Consequently a significant majority of the adult population in each community, except Corinne, consisted of foreign born.

Since the selection of residence was largely a matter of personal

Table XII

SUMMARY OF NATIVITY CHARACTERISTICS FOR SELECTED SETTLEMENTS
ALONG THE WASATCH FRONT COMPILED FROM
THE 1870 MANUSCRIPT U.S. POPULATION CENSUS SCHEDULES

Place of Birth																
	United States			Europe										Other		
Town	Utah	Other	U.S. % of Tot. Pop.	British Isles	% of For. Born	% of Tot. Pop.	Scand-inavia	% of For. Born	% of Tot. Pop.	Other Europe	% of For. Born	% of Tot. Pop.	Europe % of Total	Other	% of For. Born	% of Tot. Pop.
Alpine City	100	19	57.2	69	86.3	33.2	19	12.5	9.1	0	0	0	42.3	1	1.3	.5
American Fork	579	98	60.7	372	77.8	33.4	39	8.7	3.5	7	1.6	.6	37.4	20	4.5	1.9
Bountiful	781	254	68.3	435	90.8	28.7	22	4.6	1.5	8	1.7	.5	30.7	14	2.9	1.0
Brigham City	663	153	62.6	178	35.9	13.6	297	59.9	22.6	10	2.0	.8	37.0	11	2.2	.4
Corrine	86	402	62.8	107	37.0	13.8	34	11.8	4.4	48	16.6	6.2	24.3	100	34.6	12.9
Farmington**	474	214	76.8	182	87.5	20.3	23	11.1	2.6	0	0	0	22.9	3	1.4	.3
Lehi	524	135	62.3	299	75.3	28.3	71	12.9	6.7	21	5.3	2.0	37.1	6	1.5	.6
Ogden*	1320	780	41.4	1010	92.6	31.7	30	2.8	.9	40	3.7	1.3	33.9	10	.9	.3
Payson	671	424	76.2	264	77.4	18.4	17	5.0	1.2	49	14.4	3.4	23.0	11	3.2	.8
Provo City	1249	482	72.6	451	69.4	18.9	149	22.6	6.3	26	4.0	1.1	26.3	27	4.1	1.1
Salt Lake*	6430	2170	62.3	3870	74.3	30.0	890	17.1	6.9	370	7.1	2.9	37.1	80	1.5	.6
Willard	240	89	59.6	177	79.4	32.1	1	.4	.2	12	5.4	2.2	34.4	33	14.8	6.0
Mean	1093	435	63.6	618	73.6	25.2	123	14.1	5.4	49	5.2	1.8	32.2	26	6.0	2.2

*Based on 10% Random Sample

**1st eight pages were missing

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choice rather than direction from Church authorities, one might expect a rather uneven absorption of foreign immigrants among Utah settlements. There would be a natural tendency for new arrivals to collect in those communities where they had relatives or friends, or where employment opportunities were greatest. Since it would seem unlikely that these attractions would be equally distributed through all communities, one would expect that this selective process would produce some communities comprised largely of American born, others of British born, and still others of Scandinavian born residents. In the case of Corinne and Brigham City such a natural selection seems to have occurred, but in the other ten core settlements the percentage of foreign born and the nationality of the populace varied only slightly from the norm.

Greater insight into the process of assimilation of the foreign born into the various Core settlements can be gained by looking at the nationalities of these immigrants. Three-fourths of them came from the British Isles, which meant that there was no language barrier nor other serious cultural differences separating them from New England Mormons. British immigrants probably constituted nearly half of the adult population of Utah. Thus there was no feeling of minority status and one might expect them to be found in large numbers in all communities. They comprised three-fourths or more of the foreign born in nine of the twelve communities shown in Table XII. The exceptions were Brigham City, where they constituted only 35.9% of the foreign born, Corinne, 37.0%, and Provo City, where they accounted for a little over two-thirds (69.4%) of the foreign born. The highest concentration was Bountiful with 90.8%.

Scandinavia was the other large contributor to Utah immigrants. The mean percentage of Scandinavians for all communities listed in Table XII

was 16.4% of the foreign population, but it varied from a high of 59.9% in Brigham City to a low of .4% in Willard about 12 miles to the south, which had only one Scandinavian. Scandinavians comprised a small but significant minority in all of the other Core communities. The greatest concentration in actual numbers was in Salt Lake City, where approximately 890 of them lived but they accounted for only 17.1% of the foreign born. It was Brigham City that emerged as a city of Scandinavians. Here they accounted for 59.9% of the foreign born. Family and friendship ties combined with a common language seem to have been the prime pull factors in attracting Scandinavian immigrants to Brigham City.[1] On the other hand, the language barrier and minority status in other settlements acted as a deterrent to their dispersal throughout Core communities.

Twenty Year Analysis of Nativity Trends

A comparison table (Table XIII) was also constructed for the two decades (1860-1880) of nativity characteristics of the population for the twelve selected Core communities. The results clearly indicate that the ratio of the population born in Utah steadily increased, while the percentage of those born elsewhere in the United States steadily declined. Certainly the immigration of U. S. citizens to Utah was not keeping up with the rate of natural increase. The percentage of foreign born, on the other hand, remained relatively stable throughout the 20 year period, indicating that the high rate of natural increase was matched by immigration from Europe. Scandinavians comprised an ever increasing percentage of the foreign born while the percentage of those from the British Isles

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[1]For a more complete account of the settlement of Scandinavians in Brigham City see Part I, Chapter 5.

Table XIII

SUMMARY OF NATIVITY CHARACTERISTICS OF SELECTED WASATCH FRONT COMMUNITIES

1860-1880

COMPILED FROM THE MANUSCRIPT U.S. POPULATION CENSUS SCHEDULES

	% of population born in Utah			% of population born elsewhere in U.S.			% of population foreign born			% of foreign born from British Isles			% of foreign born from Scandinavia		
Towns	1860	1870	1880	1860	1870	1880	1860	1870	1880	1860	1870	1880	1860	1870	1880
Alpine	42	48	39	25	9	18	33	43	43	97	86	71	0	13	29
Am. Fork*	44	52	66	23	9	10	33	39	24	81	78	89	8	9	11
Bountiful	32	52	65	39	17	8	29	31	27	81	91	91	8	5	4
Brig. City	37	51	54	19	12	6	44	37	40	58	36	25	38	60	70
Corrine**	--	11	43	--	52	43	--	37	14	--	37	25	--	12	0
Farmington	36	53	64	33	24	15	31	23	21	95	88	77	5	11	9
Lehi	36	50	64	25	13	3	39	37	33	68	75	71	15	13	21
Ogden	35	41	47	37	24	20	28	35	33	74	93	71	17	3	16
Payson	17	47	58	57	29	18	26	24	24	80	77	66	4	5	20
Provo	41	52	59	39	20	11	20	28	30	76	69	58	12	23	28
Salt Lake	36	47	45	28	16	14	37	37	41	86	74	66	8	17	23
Willard***	39	43	62	26	16	17	33	41	21	95	79	100	5	0	0
Mean	36	46	56	31	20	15	32	34	29	81	74	67	11	14	19

1860 and 1880 data based on 10% random sample. 1870 data represents total population except Ogden and Salt Lake City which were also based on 10% random sample. Salt Lake City in 1880 based on 2% random sample.

*American Fork is listed as Lake City in 1860

**Corrine did not exist in 1860

***Willard in 1860 includes all people utilizing the Willard Post Office. The census did not identify Willard City.

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declined. Of the twelve communities listed, 8 had a larger percentage of Scandinavians in 1880 than in 1870 and 9 had a lower percentage of those from the British Isles for the same period. The British Isles still accounted for an average of 67% of the foreign born while Scandinavia accounted for 19%, making a total of 86%, which represented a 6% drop from 92% in 1860. Immigrants from elsewhere in Europe were increasing although they still accounted for a negligible proportion of the total foreign born.

Occupational Structure

In addition to information on age, sex, and nativity, the manuscript census schedules list the occupation of each male over 15 years of age and each employed female. It represents the best index available for measuring the stage of economic development and variety of economic functions in each town or village.

To organize this information for the twelve Core communities in a meaningful fashion, each occupation was classified under three general headings--primary, secondary, and tertiary. The results are shown in Table XIV. Since a high percentage of people employed in agriculture was to be expected in frontier communities, this category was further broken down into farmers, farm laborers, and other agricultural occupations. For a breakdown of occupations classified as secondary and tertiary, see occupation tables for Kaysville and Springville, Chapter 5. The assistant marshals responsible for taking the census were given the following instructions regarding occupations:

> Occupation.--The inquiry, "Profession, occupation, or trade," is one of the most important questions of this schedule. Make a study of it. Take special pains to avoid unmeaning terms, or such as are too general to convey a definite idea of the occupation...
>
> ...Be very particular to distinguish between farmers and

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Table XIV

SUMMARY OF OCCUPATIONAL DATA OF SELECTED TOWNS AND CITIES ALONG THE WASATCH FRONT

COMPILED FROM THE 1870 MANUSCRIPT U.S. CENSUS SCHEDULES

Towns	Number Listing an Occupation	Percent of Total Pop.	Primary Production								Secondary		Tertiary	
			Agriculture											
			Farmer		Farm Laborer		Other		Mining					
			No.	% of *Occ.	No.	% of *Occ.	No.	% of *Occ.	No	% of *Occ.	No	% of *Occ.	No.	% of *Occ.
Alpine City	48	23.1	26	54.2	0	0	0	0	0	0	7	14.6	15	31.3
American Fork	219	19.6	80	36.5	1	.5	0	0	0	0	25	11.5	113	51.6
Bountiful	355	23.4	108	30.4	136	38.3	1	.3	9	2.5	35	9.9	66	18.6
Brigham City	327	24.9	88	26.9	93	28.4	2	.6	1	.3	58	17.7	85	26.0
Corinne	458	58.4	2	.4	5	1.1	1	.2	7	1.5	90	19.7	353	77.1
Farmington	250	27.9	60	24.0	67	26.8	0	0	8	3.2	36	14.4	79	31.6
Lehi	202	19.1	86	42.6	1	.5	2	1.0	0	0	15	7.4	98	48.5
Ogden**	880	27.6	120	13.6	120	13.6	0	0	0	0	140	15.9	500	56.8
Payson	270	18.8	97	35.9	19	7.0	6	2.2	0	0	54	20.0	94	34.8
Provo	479	20.1	140	29.2	4	.8	4	.8	0	0	85	17.8	246	51.4
Salt Lake **	9920	21.2	900	30.8	70	2.4	50	1.7	370	12,7	490	16.8	1040	35.6
Willard	141	25.5	48	34.0	61	43.3	0	0	1	.7	17	12.1	14	9.9
Mean	1150	25.8	146	29.9	56	13.6	5.5	.6	33	1.7	88	14.8	225	39.4

*Percent of population listing an occupation

**Based on a 10% random sample

> farm laborers. In agricultural regions this should be one of the points to which the assistant marshal should especially direct his attention.
>
> ...You are under no obligation to give any man's occupation just as he expresses it. If he cannot tell intelligibly what it is, find out what he does, and characterize his professions accordingly.
>
> The inquiry as to occupation will not be asked in respect to infants or children too young to take any part in production. Neither will the doing of domestic errands or family chores out of school be considered an occupation. "At home" or "attending school" will be the best entry in the majority of cases. But if a boy or girl, whatever the age, is earning money regularly by labor, contributing to the family support, or appreciably assisting in mechanics or agricultural industry, the occupation should be stated.[1]

The above instructions do not define farmer or farm laborer. However, the instructions for the agricultural schedule do define farm. "A farm is what is owned or leased by one man and cultivated under his care."[2] Apparently a farmer was one who owned or leased a farm while a farm laborer was a hired hand. Such entries as "Farm hand," "ranch hand," "runs a dairy," "herd boy," "raises stock," were common. Unmarried males who worked on their father's farms were usually classified as "farm hand," or "ranch hand," and are included in Table XII under the heading "farm laborer."

Several significant features are revealed by Table XIV. The high proportion of women and children shown in the earlier tables is also evident here in the low percentage of the population listing an occupation. The mean for the twelve Core communities was 25.80%, a remarkably low figure, but this was slightly distorted upward by Corinne with its 58.41%

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[1]Carrol D. Wright and William C. Hunt, History and Growth of the United States Census. 1900. (Wash. DC: US Gov. Printing Office 1900). Senate Doc. 1 & 4. 56th Congress., p.

[2]Ibid., p. 161.

employed. Corinne was clearly an anomaly along the Wasatch Front. The average percentage of those listing an occupation for the state as a whole was 24.79. This compares with the following percentages for neighboring states: Arizona 62.44, California 42.60, Colorado 44.11, Idaho 72.53, Nevada 63.33, and New Mexico 31.96.[1] Three Core communities--Lehi, American Fork, and Payson--had less than 20% of their population gainfully employed. Since this included any boy or girl, whatever the age, who earned money regularly contributing to the family support, or who assisted appreciably in mechanics or agriculture, this is surprisingly low. In some cases boys 12-14 years of age were listed as "farm hand," "ranch hand," or "herd boy." On the other hand, young men 16-18 were sometimes listed "at school" or "at home," and are not counted as part of the employed. The low percentage of employed persons clearly distinguished the Mormon communities from other frontier settlements, and as mentioned earlier in this chapter placed a heavy financial burden on the small income producing population.

A clear insight into the general characteristics of the economy is shown by the nature of the employment. The author expected frontier communities in 1870 to be highly dependent on the primary sector of the economy, as underdeveloped countries are today. It was thought that most of the income producing population would be employed in agriculture or mining. This was not the case along the Wasatch Front. The mean percentage of people engaged in primary production was 44.41. Agriculture accounted for 41.93%, among these 12 Core communities and 48.46% for the state as a whole while mining accounted for only 2.48%. Well over half

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[1]Computed from U. S. census data.

(55.61%) of the employed population were employed in the secondary and tertiary sectors of the economy, which would indicate that urbanization was well advanced by 1870. Still five communities--Alpine City, Bountiful, Brigham City, Farmington, and Willard--had over half of their employed population in agriculture, distinguishing them as agricultural villages. The rest were urban centers with those engaged in urban functions clearly outnumbering those engaged in rural ones.

Another interesting feature illuminated by Table XIV is the regional pattern of the ratio of farmers and farm-laborers to other occupations. Excluding the Gentile City of Corinne, those communities north of Salt Lake City had a higher percentage of people employed in agriculture (51.89%) than Utah Valley (41.52%). Yet the mean percentage of those listed as farmers in Utah Valley was higher than that in the northern settlements--39.27% compared with 22.25%. At the same time the northern settlements averaged 29.25% listed as farm laborers while Utah Valley had only a .97% in this category.

The reason for this regional difference is not apparent. No such regional pattern in the composition of the population is indicated by Table X or Table XI. Church authorities apparently played a more direct role in establishing the original settlements in Utah Valley than they did in the north, but that would seem to have little or no bearing on the agricultural employment in 1870.

It could be hypothesized that this pattern of agricultural employment might result from similar regional patterns in farm size. If farms were smaller in Utah Valley there would be less need for farm laborers since the owner or operator could supply the required labor himself. On the other hand, larger farms in the north might require hired laborers. A

tabulation of data from the agricultural manuscript census schedules on farm size fails to support this hypothesis. The mean number of improved acres of farm land per farm was 21.80 for the Wasatch Front as a whole. Three northern settlements--Willard, Bountiful and Farmington--were over that amount and two--Ogden and Brigham City--were lower. In Utah Valley two settlements--Payson and American Fork--were higher than the mean while three were lower. The differences were not great however. Payson had the largest farms averaging 33.95 acres of improved land per farm while Salt Lake had the smallest--17.24 acres. Farms were small all along the front; there was no significant regional difference between those in Utah Valley and those north of Salt Lake City.

Another possible explanation for the difference in the number of farmers and farm-laborers would be a difference in the types of farm crops. If the northern settlements were producing more orchard or truck crops, there would be a need for more hired labor. Again the agricultural census fails to support such a hypothesis. The highest value for orchard products listed in the agricultural census schedules is for Provo in Utah Valley, not one of the northern settlements. Provo produced $4,036.00 worth of orchard products while the highest production in the northern communities was at Bountiful with $1,010.00 worth. That amount was exceeded by two other Utah Valley settlements--Payson and Lehi--as well. If orchard crops required more hired hands in 1870, Utah Valley, not the northern communities, should have had them. Actually fruit orchards were primarily a later phenomenon and had little effect on the 1870 occupational structure.

Nor do truck crops offer any clue to explain the agricultural employment pattern. A column in the agricultural census schedules included

"produce of market gardens" in dollars, but it is blank for most Utah communities. The highest production listed is Bountiful, with $4,500.00. While this might indicate a slightly greater need for farm laborers in Bountiful than some of the other settlements, it offers no explanation for the regional pattern of farm-laborers shown in Table XII. The community that ranked second was Provo, with $1,311.00.

Since there is no apparent reason for such a different pattern of agricultural employment between these communities south of Salt Lake and those to the north, it seemed essential to scrutinize the census schedules more closely. The census was taken by the assistant marshal in each county. Thus there were five different census takers responsible for collecting the information tabulated in Tables X-XII. This was recorded on approximately 770 handwritten pages, with 40 names per page on most pages. Consequently there was much room for human error in recording the data originally and in the present tabulation. Scattered errors would not account for a distinctive regional pattern however, since they would likely occur randomly throughout the record.

Such a regional pattern might occur if the census taker in one county interpreted the census instructions differently than his colleagues. At first glance, it appears that the assistant marshal in Utah County may not have distinguished between common laborers and farm laborers. Several of the Utah County communities had no farm laborers listed at all but had many laborers, while the northern communities had a significant number listed in both categories, but fewer laborers. Since laborers were included in the tertiary sector of the economy and farm laborers in the agricultural sector this would alter the employment structure considerably.

However, in view of the specific nature of the instructions given to the assistant marshals in regard to occupations and the stress that was put upon recording the information accurately, it seems unlikely that the census taker would fail to distinguish between laborers and farm laborers. Moreover, the assistant marshal in Utah County, William P. Appleby, did identify 19 farm laborers in Payson, one in American Fork, one in Lehi, and four in Provo. Therefore, he would have been inconsistent with himself if he indiscriminately lumped laborers and farm laborers together elsewhere.

One other possible hypothesis is that farmers in the northern communities listed their sons as farm laborers, while the farmers in Utah Valley listed their sons as laborers. A closer look at the farm laborers in the various settlements also eliminated this possibility. From 25% to 50% of the farm laborers were heads of families. In each community less than half of the farm laborers were sons of farmers living at home.

It is the conclusion of this investigator that the manuscript census schedules represent an accurate accounting of the occupations of Utah settlers. The differences in the agricultural occupations of the Utah Valley settlements with those to the north is believed to result from the nature of the settlements. In Utah Valley, nearly all of the settlers lived in nucleated villages, whereas in Davis, Weber and Box Elder Counties, many farmers lived on isolated farmsteads outside the village, as will be presented shortly. For these scattered rural settlers, their employment would most likely be restricted to agricultural pursuits, while settlers in the village might find a variety of employment in addition to farm work. Therefore, they would classify themselves as common laborers rather than farm laborers since much of their employment might be non-agricultural.

In Utah Valley, even sons of farmers living at home were usually listed as laborers rather than farm laborers.

Twenty Year Analysis of Occupational Trends

As with the age, sex, and nativity tables, a summary table of occupational data was prepared for 1860-1880 (see Table XV). The percentage of the population listing an occupation increased steadily throughout the two decades, which is in harmony with the previous findings showing an increase in the average age during the same period and a decline in the percentage of young children. The average percentage increased from 19% in 1860 to 28% in 1880, but still remained relatively low; less than one-third of the population in every settlement listed an occupation in 1880.

The average percentage of primary occupations (agriculture and mining) dropped from 58% in 1860 to 44% in 1870, but underwent an unexpected increase during the second decade, accounting for 48% in 1880. All but two communities--Bountiful and Willard--experienced a decline in the percentage of primary occupations during the 1860's, while seven communities experienced an increase in the percentage of primary occupations during the 1870's. In six of these seven communities, including all five Utah Valley settlements, the ratio of primary occupations dropped during the 60's but increased during the 70's while the ratio in Bountiful increased continually through both decades. Salt Lake City, Ogden and Brigham City, on the other hand, experienced a consistent decline in the ratio of primary occupations and a continual increase in secondary and tertiary ones.

The increase in the percentage of primary occupations during the 1870's would seem to be an anomaly. One would expect a continual growth of urban functions through time and a corresponding decline in primary occupations, as occurred in Salt Lake City, Ogden, and Brigham City. Yet

Table XV

SUMMARY OF OCCUPATIONAL CHARACTERISTICS OF SELECTED TOWNS & CITIES ALONG THE WASATCH FRONT

1860-1880

COMPILED FROM THE MANUSCRIPT U.S. POPULATION CENSUS SCHEDULES

	Percent of Population listing occupations			Percent employed in primary sector			Percent employed in secondary sector			Percent employed in tertiary sector		
Towns	1860	1870	1880	1860	1870	1880	1860	1870	1880	1860	1870	1880
Alpine	19	23	33	81	54	67	8	15	12	12	31	21
Am. Fork*	20	20	20	54	37	58	12	11	6	34	52	36
Bountiful	19	23	29	42	69	71	11	10	16	42	19	12
Brigham City	15	25	26	64	56	41	15	18	20	21	26	39
Corinne**	---	58	29	--	2	0	--	20	25	--	77	75
Farmington	18	28	31	57	51	79	14	14	6	29	32	15
Lehi	22	19	28	57	44	69	14	7	7	28	49	24
Ogden	15	28	33	60	27	15	14	16	24	26	57	61
Payson	19	19	26	56	45	59	26	20	17	18	35	24
Provo	18	20	29	58	31	40	23	18	22	19	51	38
Salt Lake	21	21	31	45	35	10	13	17	34	42	36	56
Willard***	18	26	31	69	77	69	10	12	8	21	10	23
Mean	19	26	28	58	44	48	15	15	16	27	39	35

1860 and 1880 data based on 10% random sample. 1870 data represents total population except Ogden and Salt Lake City whch were also based on 10% random sample. Salt Lake City in 1880 based on 2% random sample.

*American Fork is listed as Lake City in 1860.

**Corinne did not exist in 1860.

***Willard in 1860 includes all people utilizing the Willard Post Office. The census did not identify Willard City.

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the reverse seems to have been the case in Utah Valley, which seems particularly strange in view of the reduction in the number of farmers in Springville during that same decade. The number of farms in Springville dropped from 145 in 1870 to 84 in 1880.[1] Springville was apparently an exception to the rule, however. The agricultural census shows that the number of farms in Utah Valley increased from 1,178 in 1870 to 1,321 in 1880--a 12% increase. At the same time the average farm size and the acres of agricultural land more than doubled; the former increasing from 31 acres in 1870 to 68 acres in 1880--a 119% increase, and the latter from 29,616 acres in 1870 to 63,116 acres in 1180--a 113% increase.[2] A similar expansion in agricultural land was taking place all along the Wasatch Front. The larger farm size in Utah Valley in 1880 is reflected in a larger number of farm laborers and herdsmen included in the occupational listings.

In addition to the agricultural occupations, miners were more numerous in 1880 adding slightly to the ratio of those employed in the primary sector of the economy. The major impact of mining, however, was indirect. The expansion of mining, precipitated by the completion of the transcontinental railroad in 1869, produced an expanding market for farm products from the Wasatch Front in widely scattered mining camps in the mountains of Utah and neighboring states. This increased market seems to have been a major incentive for the expansion of agriculture in the 1870's, which in turn created an increased percentage of primary occupations in many Core communities, as shown in Table XV.

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[1]For a full discussion of the changes in the number of farmers and the size of farms in Springville, see Chapter 5, Part IV, pp. 280-283.

[2]Calculated from data published in the Report of the Statistics of Agriculture, U. S. Ninth and Tenth Census, 1870 and 1880 (Washington, D.C.: Government Printing Office,

Spatial Development

Settlement Theory

Scholars of frontier settlement have long recognized the close relationship between economic activity, stages of evolution and settlement pattern. Turner in his controversial "Frontier Thesis," identified six stages of development on the American Frontier.

> The United States lies like a huge page in the history of society. Line by line as we read this continental page from the West to East we find the record of social evolution. It begins with the Indian and the hunter; it goes on to tell of the disintegration of savagery by the entrance of the trader, the pathfinder of civilization; we read the annals of the pastoral stage in ranch life; the exploitation of the soil by the raising of unrotated crops of corn and wheat in sparsely settled farming communities; the intensive culture of the denser farm settlement; and finally the manufacturing organization with city and factory system.[1]

Wade, a strong anti-Turnerian, argues that the sequence was reversed.

> The towns were the spearheads of the frontier. Planted far in advance of the line of settlement, they held the West for the approaching population. Indeed, in 1763, when the British threw the Proclamation Line along the Appalachians to stop the flow of settlers, a French merchant company prepared to survey the streets of St. Louis a thousand miles through the wilderness. Whether as part of the activity of the French and Spanish from New Orleans or of the English and Americans operating from the Atlantic Seaboard, the establishment of towns preceded the breaking of soil in the transmontane west.[2]

In a recent theoretical scheme of settlement process, where economic activity is the dominant control, Blouet identifies six phases of development. Phase I--"Limited Function Settlement;" Due to competition for

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[1]Fredrick Jackson Turner, reprinted in Ray Allen Billington, The Frontier Thesis: Valid Interpretation of American History? (New York: Holt Rinehart and Winston, 1966), p. 11.

[2]Richard C. Wade, The Urban Frontier (Chicago, Illinois: The University of Chicago Press, 1959), p. 1.

land, evenly spaced farm settlements develop based on subsistence agriculture. Phase II--"The Emergence of Villages;" The production of farm surpluses leads to the development of villages which serve as central places to facilitate the exchange of goods and services; Phase III--"The Emergence of Towns;" This occurs with increased inter-regional trade. Phase IV--"The Establishment of Centers of Manufacturing;" This involves the development of large scale manufacturing which historically has meant that these centers developed near sources of energy and raw materials. Phase V--"The Growth of Conurbations;" Because of the attractiveness of major industrial centers as centers of goods, markets, financial and technical expertise, sources of labor, and as the location of ancillary and supporting industries, these centers continue to expand outward engulfing satellite communities. Phase VI--"Dispersion;" The costs of labor and congestion become high and increased communication ability permits a high degree of contact over wide areas which encourages dispersion to take place to communities away from the conurbations.[1]

This scheme was derived primarily from the Western European experience during the industrial revolution. The author cautions against its use as a predictive model in newly developing areas and recognized its need for modification in applying it to the New World.

> The development of Anglo American settlements requires a modified scheme in that growth started at a later period with a different set of preconditions. The modified scheme would start at phase three as a transoceanic colonial off-shoot.[2]

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[1]Brian W. Blouet, "Section I; Concepts, in Theory and Practice," from Man, Settlement, and Urbanism, ed. by Peter J. Vcko, Ruth Tringham, and G. W. Dimbleby. (London: Duckworth, 1972), pp. 3-15.

[2]Ibid., p. 13.

Nevertheless it represents a clear and concise statement of spatial development in settlement process and can be compared with the sequence of events in the real world.

Whebell, in his corridor theory of urban systems, argues that urban settlements evolve in a linear pattern connected by major transport routes, forming corridors of interaction. Because of irregularities in the physical surface of the land, the uneven distribution of innovations in ideas and/or technology, and the fact that human achievement follows the general principle of least effort, settlements do not ordinarily develop in a uniform pattern as predicted by Christaller and Losch, but rather in corridors along transportation routes. These routes form cultural gradients along which diffusion of ideas occurs. Although development is continuous, Whebel identifies five historical stages: initial occupance, commercial agriculture, railway transport, motor transport, and metropolitanism. In each stage innovations appear first in the corridor and then diffuse outward.[1]

Comparison with Mormon Settlements

The development of Mormon settlement in the Great Basin does not fit the sequent occupance described by Turner, nor, without modification the more precise scheme of Blouet, nor does it exemplify Wade's claim that towns were the "spearhead of the frontier" holding the West for the approaching population. Here the exchange of goods and services in central places developed simultaneously with nearby agriculture in a symbiotic relationship. The urban and agricultural functions emerged together.

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[1]C.F.J. Whebell, "Corridors: A Theory of Urban Systems," Annals of the A.A.G., Vol. 59 (March, 1969, pp. 1-26.

While some of the pioneer company were busily planting crops, others were surveying a town and building a fort. The 1850 census, taken just three years after the first settlement, shows that 50.11% of the population were engaged in agriculture and 49.49% were employed in the secondary and tertiary sectors of the economy.

Blouet's phase I and phase II never existed as distinct sequences in the process of settlement. Both isolated farmsteads and agricultural villages constituted important elements in Mormon settlement, but they did not constitute pre-town phases. The Salt Lake experiment really began at phase III--"The Emergence of Towns"--as a colonial off-shoot of the eastern states. It was insulated from the socio-economic-political influences current elsewhere in the United States by a thousand miles of unsettled territory, but it was never completely isolated. A continual influx of new settlers from the United States and Europe, as well as continuing contact with transcontinental traffic, meant that from its inception, Salt Lake City would serve as a center of inter-regional trade. It was aided by continual addition of capital, manufactured goods, and labor from the East. It was, however, largely self-sustaining as far as its food supply was concerned. Agriculture was the basic industry until the end of the 19th Century.

New daughter colonies soon budded off from Salt Lake, but they likewise began at Phase III with strong economic, political and cultural ties with the mother colony. It is interesting to note that in large measure agricultural villages preceded the isolated farmsteads as they did in New England.[1] The basic control was not economic activity, but ecclesiastical

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[1]Glen T. Trewartha, "Types of Rural Settlement in Colonial America," Geographical Review, Vol. 36, No. 4, 1946), pp. 572-575.

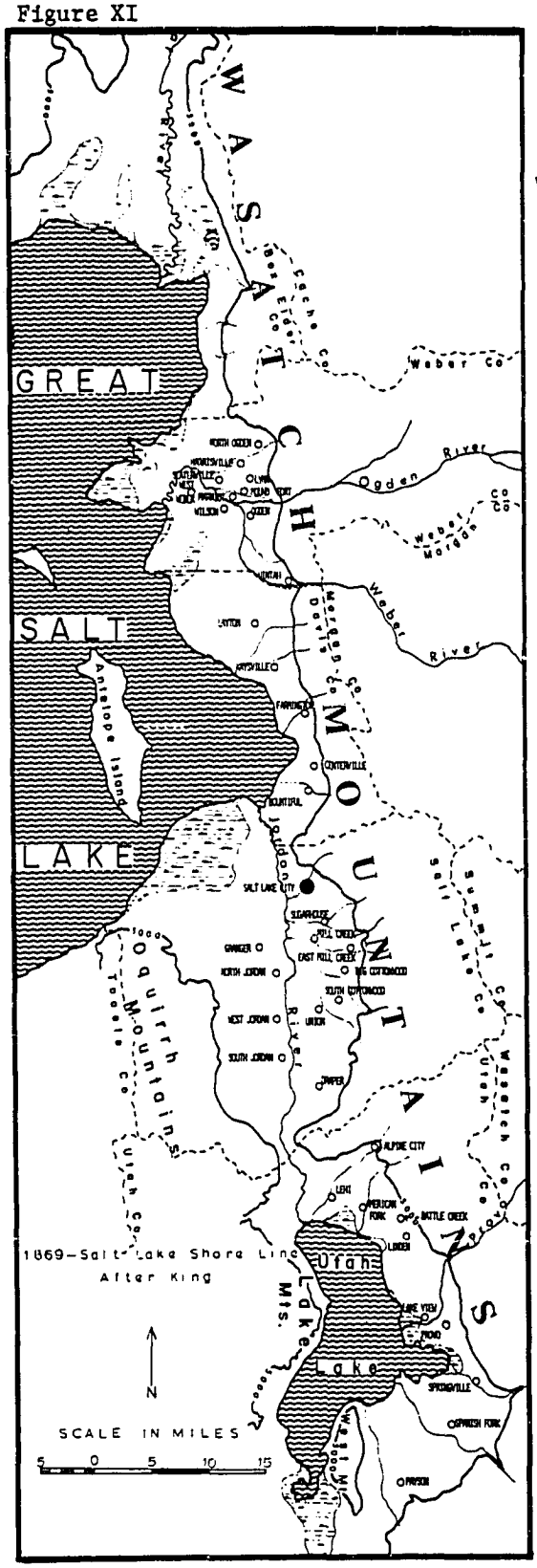
policy and the need for defense. Most of the earliest settlements developed as nucleated towns and agricultural villages, whereas later settlements, e.g. Orem, Linden, Syracuse, Warren, Kanesville, and Roy developed as dispersed farmsteads or as string towns along the roadways. The Wasatch mountains to the east and the lakes and Oquirrh mountains to the west formed effective physical barriers that blocked the spread of settlements in those directions. The result was a linear pattern of settlement along the alluvial piedmont at the base of the Wasatch mountains that conformed to Whebell's corridor theory.

Settlement Pattern in 1850

The initial pattern of settlement that had developed by 1850 is discussed in Chapter 3 and shown in Fig. XI, page 149. There is no way to identify the size of each settlement at this early date. The dot on the map merely means that the first settlers had established themselves at that location by 1850. In some cases this meant that a fort had been constructed and a village or town was well underway; in other cases it merely meant that one or two pioneer families had cleared farm land and established makeshift residences. The settlements were remarkably closely and uniformly spaced. While the 1860 census identifies the number of people in individual communities, the 1850 census merely lists the persons living in each county without regard to the particular settlement. The population characteristics for the counties are shown in Table XVI.

Although Provo, the first settlement in Utah Valley was not settled until 1849 and most of the other communities were not founded until the following year, the 1850 census takers found almost as many people in Utah County as in Davis and Weber counties combined, even though Bountiful, Centerville, Farmington and Ogden had been settled in 1847 and 1848 at

Figure XI



Settlements Along The Wasatch Front

1850

LEGEND

Not Identified by US Census	○
Hamlet Pop. Under 400	◒
Village 400-999	●
Small Town 1,000-1,999	○
Large Town 2,000-4,999	◒
City Over 5,000	●

Table XVI

POPULATION CHARACTERISTICS OF UTAH COUNTIES IN 1850

County	Total	Male	Female	Under 15	Employed in Agriculture	Other	Tot. Emp.
Davis	1135	599	535	521	255	61	316
S. L.	6231	3119	3036	2929	608	920	1528
Utah	2026	1124	876	879	298	322	620
Weber	1186	711	475	492	201	110	311

Compiled from 1850 Manuscript U. S. population census schedules.

least two years before. Stansbury's map of the Salt Lake area in 1849-1850 (Fig. IX) identifies substantial portions of surveyed land in Salt Lake, Davis and Weber counties, but none in Utah County. Nor are there any settlements indicated in the latter county with the exception of Provo City. The site for the city was identified but apparently the land had not been surveyed at the time Stansbury's mapping crew did their field work in the region.

After the brief and bloody encounter with the Indians at Fort Utah (Provo) in February, 1850, the area was considered safe for settlement. Eight new communities--American Fork, Lehi, Pleasant Grove, Springville, Payson, Alpine, Spanish Fork, and Palmyra were founded during the late summer and autumn of that year.[1] This rapid filling up of Utah County is indicative of the greater interest on the part of Church leaders in southern settlements as opposed to northern ones. Greater encouragement and more direction were given to this Utah Valley push. Brigham Young had an unfavorable opinion of the climate in the north and did little to encourage settlement in that direction. The winter of 1855-56 seemed to bear out his fears. A severe plague of grasshoppers the previous summer had left the settlements dangerously short of grain supplies all along the front. The meager harvest of 1855 was followed by heavy snows in early autumn which covered up grazing. Temperatures dropped below normal and it remained cold, culminating in a disastrous loss of cattle. Wilford Woodruff estimated that four out of every five cattle were lost in the northern counties. The Church lost 2,600 head in Weber and Cache counties alone.[2]

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[1]Coffman, "History of Utah Valley," pp. 115-123.

[2]Arrington, Great Basin Kingdom, pp. 148-152.

This experience reinforced Young's negative impression of the northern country. Warren Foote reports in his journal:

> President Young and Company returned from his journey north. They left Salt Lake City for the north the 24th of April last...[May 31st, 1857] President Young addressed the Congregation and gave a short account of his journey north. He did not recommend the country very highly.[1]

It is not surprising therefore that greater interest was given to the Utah Valley settlements. Communities in the south were to be important links in the chain of settlements comprising the "Mormon Corridor" which was perceived as an alternate route for bringing foreign immigrants to Utah via the Pacific Coast in California.[2]

Utah Valley communities were evidently settled as complete villages with a variety of vocational skills present. The 1850 census indicated that in Utah County only 48% of the employed population were engaged in agriculture compared with 81% in Davis County and 65% in Weber County, while a much higher percentage of the wage earners were engaged in the exchange of goods and services in Utah County. (See Table XVII for a more complete breakdown of occupations.)

The 1850 census was probably not taken in Utah County until early 1851. Brigham Young did not receive word of his appointment as U. S. Census Agent until August 21, 1850, allowing insufficient time to complete the census before the end of the year.[3] The census taker, R. M. McBride, did not record the date the census was begun in Utah County but he did

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[1]Warren Foote, diary, entry for May 31, 1857.

[2]Hunter, Brigham Young the Colonizer, p. 65.

[3]History of Brigham Young, MS, p. 76.

Table XVII

COMMON OCCUPATIONS IN 1850 IN UTAH BY COUNTY

	Salt Lake		Utah		Davis		Weber	
	No.	%	No.	%	No.	%	No.	%
Farmer	608	39.79	298	48.06	255	80.70	201	64.63
Laborer	386	25.26	186	30.00	10	3.16	21	6.75
Blacksmith	44	2.88	14	2.26	4	1.27	19	6.11
Carpenter	53	3.47	12	1.94	4	1.27	12	3.86
Mason	49	3.21	8	1.29	1	.32	5	1.61
Joiner	39	2.55	8	1.29	0	0	0	0
Shoemaker	39	2.55	10	1.61	2	.63	2	.64
Miller	20	1.31	4	.65	3	.95	2	.64
Tailor	17	1.11	4	.65	0	0	8	2.57
Cooper	6	.39	8	1.29	4	1.27	4	1.29
Clerk	18	1.18	1	.16	3	.95	1	.32
Merchant	10	.65	1	.16	1	.32	1	.32
Teacher	6	.39	5	.81	3	.95	3	.96
Gunsmith	11	.72	1	.16	1	.32	0	0
Other	222	14.53	60	9.68	25	7.91	32	10.29
Total	1,528	100	620	100	316	100	311	100
Total Pop.	6,231		2,026		1,135		1,107	

Compiled from the 1850 Manuscript U. S. population census schedules

record the date--April 29, 1851--that he began taking the census in Sanpete County. Consequently, the Utah County census must have included those settlers moving into the valley in late 1850.

Population growth in Davis, Weber and Box Elder counties, on the other hand, developed relatively slowly as additional settlers gradually filtered into the region. The need for cooperation in digging canals and protection against Indians kept them from scattering too far apart.

The low percentage of people in the secondary and tertiary sectors of the economy in Davis County was no doubt in part due to the proximity to Salt Lake City, where a greater variety of services and products was accessible, making it difficult for local establishments to compete. Yet the major difference seems to have been the degree of village settlement. Dispersed settlement, while probably not the rule in the northern communities, was common in Davis, Weber and Salt Lake counties. It was not until the Walker War of 1853 that these settlements were ordered to fort up, and a number of dispersed families moved into a fort or within a city wall. In some cases log houses were dragged with teams from farms to the fort and then back to the farms again after the danger was past.[1] Such was not the case in Utah Valley. Here because the greater density of Indian population made dispersed settlement more hazardous, ecclesiastical leaders promoted village settlement. Certainly the Utah County villages in 1850 had more urban functions than their counterparts to the north of Salt Lake City.

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[1]Personal interview with Chauncey Stone, a lifelong resident of Ogden, who remembers playing on the abandoned walls of Bingham Fort when he was a child.

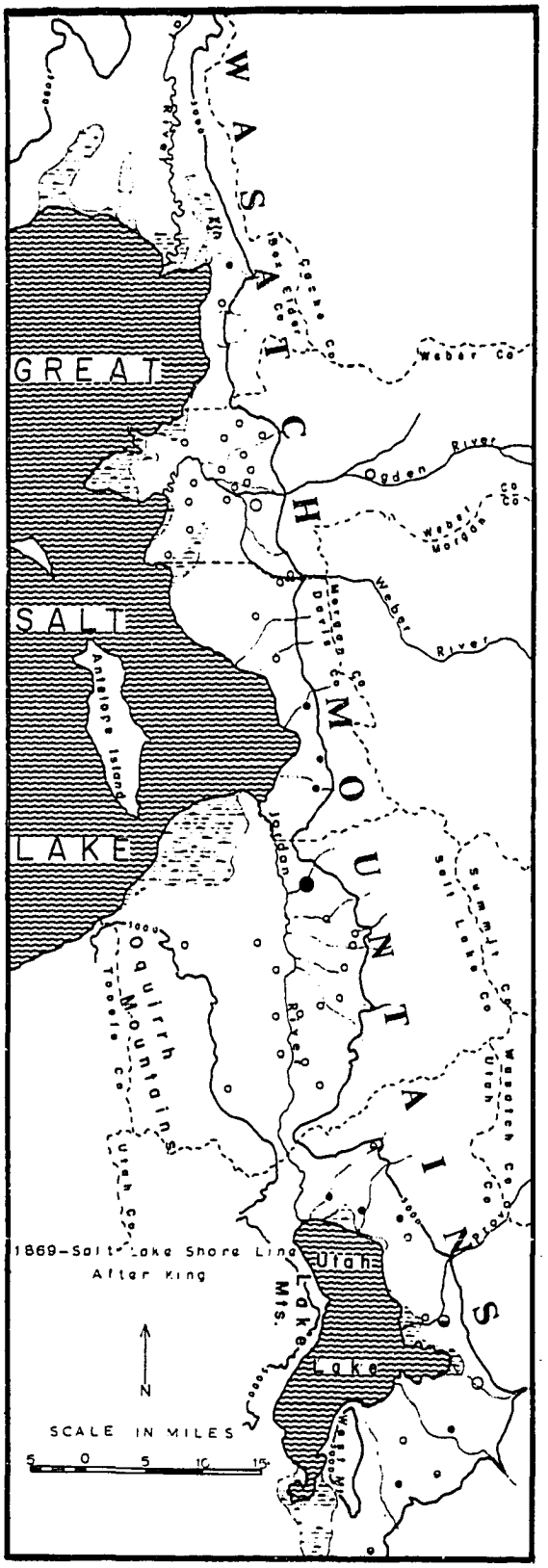
1860 Settlement Pattern

The distribution of town and cities in 1860 is shown on Fig. XII, page 156. In order to classify settlements into groups of similar size, a rank distribution for 1870 was plotted on a graph and settlements were divided into different orders where there were significant breaks in population size. The author chose 1870 because it represented the approximately chronological mid-point of the study. The basic classification was as follows:

Hamlets	0-- 399
Village	400-- 999
Small Town	1,000--1,999
Large Town	2,000--4,999
City	5,000 or more

The same classification was applied to earlier and subsequent decades for comparative purposes and to provide uniformity. The above classification is arbitrary and was designed to show significant growth trends along the Wasatch Front during the Mormon colonization period; it is based strictly on population size and does not consider the number or types of urban functions and is probably not applicable to other areas or other time periods.

In addition to communities of identifiable size, various historical records indicate that the first settlers had founded a number of small rural settlements that were not identified on the U. S. census returns. Apparently the population of these communities was not deemed sufficient to warrant the formation of separate census precincts at the time the census was taken. Call's Fort,for example, was established in 1854 as recorded in the diary of Anson Call, the founder, yet it was not identified on the U. S. census returns until 1880. Similar settlements which were known to exist, but not identified by the census are shown as small clear circles on the accompanying maps of settlement size. Such communities are frequently



Settlements Along The Wasatch Front

1860

LEGEND

Not Identified by US Census	○
Hamlet Pop. Under 400	◒
Village 400-999	●
Small Town 1,000-1,999	○
Large Town 2,000-4,999	◒
City Over 5,000	●

identified by the census in subsequent decades as they grew in size.

It is readily apparent that the growth in Utah Valley continued to outdistance the northern settlements. The population of Utah County had risen to 8,248, according to the federal census, while that of Davis, Weber, and Box Elder counties was 2,904, 3,673, and 1,608 respectfully, making a grand total of 8,185. The population of Salt Lake County was 11,295. Thus by 1860, Utah County had a slightly greater population than the three northern counties combined and was not too far behind Salt Lake County.

In addition to the normal expansion resulting from population growth, the Utah War had a definite impact on the pattern of settlement in the Core. The far flung "outer cordon" of settlements that had originally been settled to help secure Mormon control over the proposed State of Deseret, were abandoned in 1857. Most of these settlers returned to Utah communities, particularly in the Core, to aid in their defense. This helped to swell the ranks of Core settlements, but did not offset the drop in the number of incoming immigrants from the East. Immigration was drastically reduced in 1857 and virtually ceased in 1858. Thus the over-all effect of the war was a decline in the growth rate.

However, there was a substantial relocation associated with the war. In 1858 Salt Lake City and all settlements to the north were temporarily abandoned as Johnson's Army approached the territory from the east. This involved the movement of 25,000 to 30,000 people and required a major mobilization effort. These Mormon migrants settled mostly in temporary camps throughout the central and southern Utah settlements with the greatest concentrations in Utah Valley. Thousands of families with thousands of head of livestock spent the summer camped along the river

bottoms or along the eastern shore of Utah Lake. After an amicable settlement with the U. S. Government, most of these temporary settlers returned to their homes in the north, but some decided to take up permanent residence in Utah Valley, thus inflating the already rapid growth of that region. On the other hand, some citizens from Lehi learned from Weber County residents, camped in their vicinity during the evacuation, that plenty of water was available for additional settlements in Weber County and hence several hundred decided to relocate near the Weber River--founding Plain City about ten miles northwest of Ogden in the fall of 1858.[1]

Some indication of the impact of this tremendous invasion of northern settlers into Utah Valley and their subsequent evacuation following the peace settlement is manifest in the 1860 census by the number of unoccupied dwellings. These are summarized in Table XVIII. Approximately 20% of the dwellings in Utah County were not occupied when the census was taken. This varied from a high of 59% in Alpine City to a low of 13% in Springville. Five communities had over 20% of their dwellings vacant. In contrast, only 6% of the dwellings in Davis County were unoccupied and 7.5% in Weber County. This pattern apparently represents an excess of homes built during the temporary encampment of 1858, which were later left unoccupied when the northern settlers returned to their homes.

Settlement was extended north beyond Brigham City to Call's Fort in 1854, which was established as an experiment in training new immigrants from Europe in farming methods. Call's own account reads as follows:

> I was councilled [sic] by our bishops to take as many of the emigrants who were brought by the Perpetual Emigration

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[1]Milton R. Hunter, Beneath Ben Lomond's Peak, Daughters of Utah Pioneers: Weber County Chapter (Salt Lake City: Deseret News Press, 1944), pp. 211-212.

Table XVIII

Unoccupied Dwellings in 1860

Town	County	No. of Dwellings	No. Not Occupied	Percent Not Occupied
Bountiful	Davis	159	15	9.43
Centerville	Davis	80	3	3.75
Farmington	Davis	112	2	1.79
----------	Davis	192	17	8.85
Ogden City	Weber	315	28	8.89
----------		448	28	6.25
----------	Box Elder	108	13	12.04
Brigham City	Box Elder	191	6	3.14
Alpine City	Utah	22	13	59.09
Battle Creek	Utah	158	61	38.60
Lake City(Am. Fork)	Utah	151	28	18.54
Lehi	Utah	211	43	20.38
Payson	Utah	209	47	22.48
Pondtown	Utah	21	7	33.33
Provo	Utah	398	73	18.34
Spanish Fork	Utah	108	32	29.63
Springville	Utah	299	40	13.37
Santaquin	Utah		22	

Compiled for 1860 Manuscript U. S. census schedules

> Fund as I could give labour and provision. I had raised about 1500 bushels of grain. I laid the matter before President Young he said it was all right and told me to select a tract of land where I pleased and open a large farm and set as many to work as I could teach to farm. I accordingly made a selection of tract land near Bear River seven miles north of Brigham City, Box Elder County surveyed a little rise of 700 acres commenced ploughing and fencing in October, broke 100 acres of prairie sowed 40 and on the 20th of November the ground froze up and I quit business with the exception of a few families who wintered there who laboured some during the course of the winter fencing.
>
> . . . My farm in Box Elder County with 125 acres of wheat produced me about 600 bushels with a usual season I should have had 4,000. In the month of July the President and his company journeyed through Box Elder County to Millard to hunt a location for a new settlement. He accordingly did so called at my farm counselled me to build a fort to secure the people I had with me, which I immediately commenced with stone 120 feet square, built an adobie house 18 by 40 moved Maria on the farm in consequence of the scarcity of the crops and the requirement of the new fort I was involved in. I settled with my men at Christmas, nearly finished the fort 3 feet thick 6 feet high laid up in mortar by a good stone mason, turned property and payed off my men, found myself clear of debt with 125 acres of wheat growing. Saved sufficient team and cows to carry on business.[1]

Call sold the farm to Chester Loveland in 1860. The population of this small settlement during its early years is not known. It did not appear in the U. S. census until 1880, when the population was 350.

The 1860 census identifies only sixteen communities along the Wasatch Front. Ten of these were in Utah County, three in Davis and one each in Salt Lake, Weber and Box Elder counties. Although many smaller settlements were in existence at that time, they apparently were not considered significant enough to include in the census. This was particularly true of numerous small settlements in Salt Lake and Weber counties. In Salt Lake

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[1]Anson Call, unpublished journal, typescript, possession of Dee Call, Ogden, Utah ,. 1856, p. 25.

County the names of 3,059 persons were included in the county without identification of the specific communities where they lived. In Weber County there were 1,209 people in this category. The comparative figures for Davis and Box Elder counties were 1,030 and 633 respectfully. The reason for not identifying the specific settlement may be because of the dispersed nature of many rural dwellings in the northern counties. Here the Indian danger was not as great as in Utah Valley and many homes had been built in farming areas away from the village or town. (For a more complete discussion of the dispersed pattern in the north see Part II, Chapter V.)

In contrast there were no individuals listed in Utah County without identifying the particular community where they lived. At Spanish Fork, however, there were two census districts--Spanish Fork City (population 769) and Spanish Fork (population 262). Presumably, the latter represented surrounding dwellings outside the city proper. This is the only indication offered by the census of any dispersed settlement in Utah County. The population of Core communities is shown in Table XIX below.

Table XIX

POPULATION OF CITIES, TOWNS AND OTHER SUBDIVISIONS
1860

	Population	Total Core Population in County
Box Elder		1,647
Brigham City	975	
Davis		2,894
Bountiful	868	
Centerville	475	
Farmington	591	
	960	

	Population	Total Core Population in County
Salt Lake		11,295
Salt Lake City---	8,190	
---P.O. Salt Lake	2,781	
---P.O. West Jordan	324	
Utah		7,773
Alpine City	135	
Battle Creek	526	
Lake City (American Fork)	695	
Lehi	831	
Payson City	830	
Pondtown	180	
Provo	2,030	
Santaquin	158	
Spanish Fork City	769	
Spanish Fork	262	
Springville	1,357	
Weber		3,675
Ogden	1,463	
-----	2,212	

Source: U. S. population census, 1860.

In summary, the following generalization can be made about population growth in the Mormon Core between 1850 and 1860: (1) Settlements in Utah Valley grew much more rapidly than those to the north of Salt Lake City. (2) There were more settlements in Utah County large enough to be included in the 1860 census than there were to the north. (3) Village settlement was the rule in Utah Valley, while dispersed farmsteads were common in the northern counties. (4) Villages were mostly of similar size all along the front. Hamlets, towns, and cities were rare. (5) The accommodation of thousands of northern settlers during the summer of 1858 led to the overconstruction of dwellings in Utah County, many of which stood unoccupied in 1860.

Settlement in 1870

A summary of population data for communities along the Wasatch Front

in 1870 is included in Table XX below.

Table XX.

POPULATION OF CIVIL DIVISIONS LESS THAN COUNTIES

1870

	Population	Total Core Population in County
Box Elder		7,049
Bear River	317	
Bear River City	289	
Box Elder	2,080	
Brigham City	1,315	
Three Mile Creek	222	
Corinne	806	
Corinne City	733	
Willard	685	
Willard City	552	
Davis		4,459
Bountiful	1,517	
Centerville	544	
Farmington	976	
Kaysville	1,422	
Salt Lake		17,645
Big Cottonwood Ward	570	
Camp Douglas	107	
Mill Creek Ward	918	
South Cottonwood Ward	1,144	
Sugarhouse Ward	641	
West Jordan Ward	639	
Willow Creek Ward	480	
Brighton	292	
Salt Lake City	12,854	
Utah		10,540
Alpine City	208	
Lehi City	1,058	
Newton	458	
Payson	1,436	
Pleasant Grove (formerly Battle Creek)	930	
Pondtown	353	
Provo	2,384	
Santaquin	602	
Spanish Fork	1,450	
Springville	1,661	

	Population	Total Core Population in County
Weber		6,804
East Weber	343	
Hooper's	1,189	
Hulverson's (Marriot)	203	
Lynn	314	
North Ogden	683	
Ogden	3,127	
Plain City	440	
Slatersville	508	

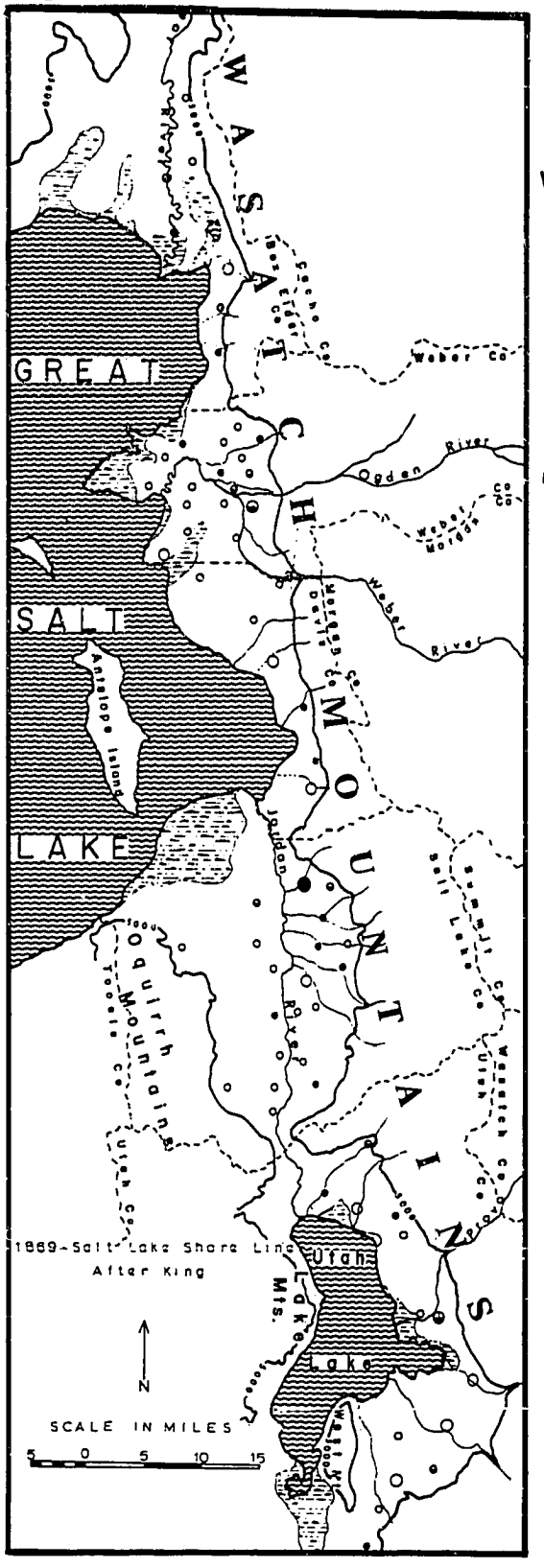
*Note--The first indentation marks precincts; the second, cities. The population of each precinct includes that of all localities situated in it.

Source: U. S. population census, 1870.

The pattern of settlements in 1870 is shown in Figure XIII. It is readily apparent that there were several significant trends during the decade of the 1860's. The most obvious change is the alteration of the growth pattern. During the 50's growth was centered in Utah Valley, with only slow growth in the northern counties. During the 60's that trend was reversed. The northern settlements were increasing rapidly in size and in number. Not only were those previously settled communities growing so that now they were included in the census but many new settlements were founded which were still too small in 1870 to be identified by the census. In Weber County the 1860 census identified only one settlement--Ogden--but in 1870 eight communities west of the mountains were included--one large town, one small town, three villages and three hamlets. The coming of the railroad had clearly helped to focus attention on the north. In 1860 Provo, in Utah Valley, was nearly 30% larger than Ogden, but in 1870 the population of the "junction city" had soared to 3,102, while Provo had remained virtually unchanged.

Box Elder County was also experiencing significant growth. Instead

Figure XIII



Settlements Along The Wasatch Front

1870

LEGEND

Not Identified by US Census	○
Hamlet Pop. Under 400	•
Village 400-999	•
Small Town 1,000-1,999	○
Large Town 2,000-4,999	◒
City Over 5,000	●

of only one village, it now had one small town, two villages and two hamlets. In addition, two new communities had been founded although they did not yet show up in the census. The most rapid growth in Davis County was in Kaysville, not too far from Ogden. Kaysville did not even appear in the 1860 census but was the second largest town in the county in 1870 with a population of 1,422. Bountiful was slightly larger with a population of 1,516 and Centerville and Farmington remained as villages.

In Salt Lake County, satellite communities east and south of Salt Lake City were now growing rapidly. There was one small town--South Cottonwood--and five villages. All of these communities were in existence in 1860, and are shown on the 1860 map, but were apparently too small or too scattered in nature to be identified in the 1860 census.

While the growth in Utah Valley had not stagnated, it had certainly slowed down during the 60's. Only one new community--Newton--appeared on the 1870 census, with a population of 458. This is the only reference to a village of that name in Utah County and its exact location is unknown. The post office was Santaquin. Newton does not appear on any of the later censuses nor does it appear on any of the contemporary maps. There is no reference to it in any of the published compilations of place names in Utah. It may have been an early name for the Spring Lake settlement about half way between Payson and Santaquin, which was settled in 1859, but did not appear on the 1870 census. American Fork replaced Lake City, and Battle Creek's name was changed to Pleasant Grove. Four settlements--American Fork, Spanish Fork, Payson and Springville--now ranked as small towns and Santaquin had grown to village size. Alpine City and Pondtown remained as hamlets although both had experienced minor growth.

1880 Settlement Pattern

During the decade of the 70's the Wasatch front experienced an expanded rate of growth while the rate for the territory as a whole declined. Still the territorial growth rate was slightly higher than that of the Wasatch Front--65% compared with 64.7%. The comparative figures for the previous decade were 58.5% for the front and 115% for the territory. The railroad stimulated growth in the Core, particularly in the largest urban centers--Salt Lake City and Ogden. Salt Lake City's population increased from 12,813 to 20,786 (a 75% increase) and Ogden grew from 3,102 to 5,246 (a 69% increase). Eleven of the 19 additional communities listed in the 1880 census that did not appear in the 1870 census were in Salt Lake County and four were in Weber County. The total population of Salt Lake County increased by 73% and that of Weber County by 56%. Table XXI gives the enumeration for Core communities in 1880 and Fig. XIV shows their distribution.

The most obvious change evident on the 1880 map is the substantial growth in Salt Lake County. The number of villages had increased from five to eight, and eight new hamlets were included in the census. Two of these--Pleasant Green and Fort Harriman were on the western slopes of the Oquirrhs and two--Granger and North Jordan (Taylor)--were one or two miles west of the Jordan. The others were found along the eastern slopes of the valley where streams emerging from the Wasatch Mountains were more numerous. The whole eastern side of the valley was now dotted with communities that ranked from hamlets to small towns.

In Box Elder County, settlements were expanding northward along the Bear River. Four settlements--Colliston, Dewyville, Honeyville and Call's Fort--were located east of the river on the alluvial piedmont of the

Table XXI

POPULATION OF CITIES, TOWNS AND OTHER SUBDIVISIONS
1880

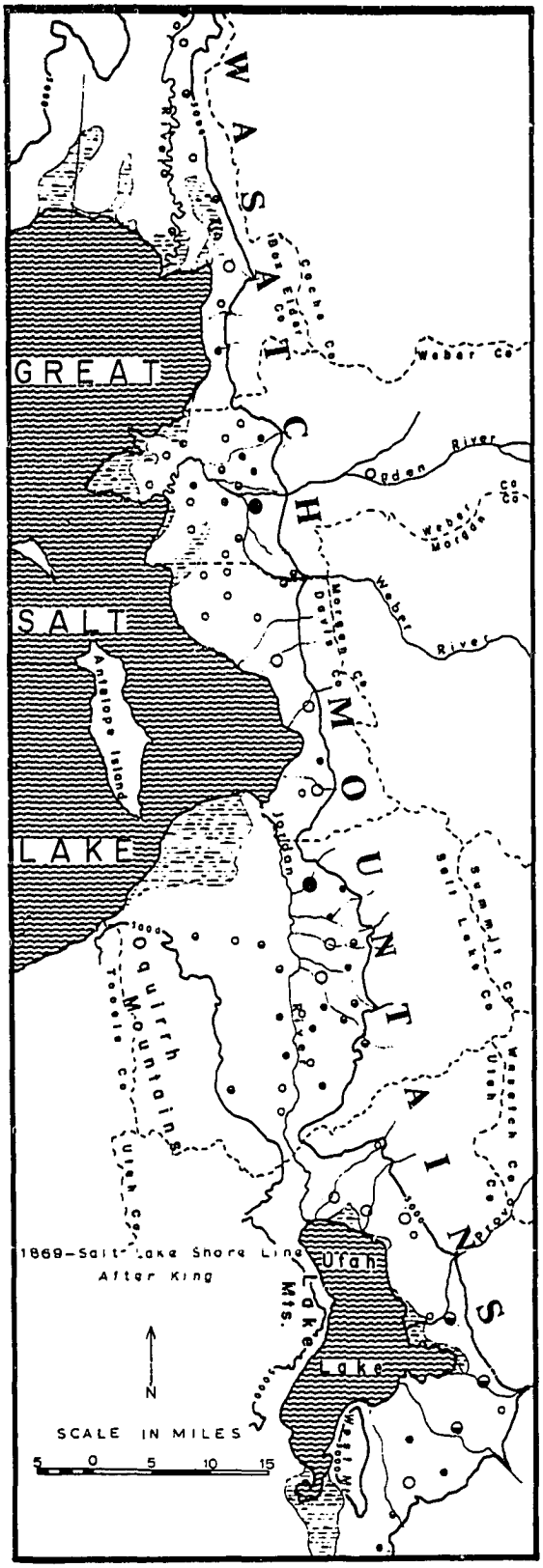
	Population	Total Population in County
Box Elder		3,867
Bear River City and precinct (coextensive in 1880)	340	
Box Elder Prec. incl. Brigham City	2,184	
Brigham City	1,877	
Call's Fort precinct	350	
Deweyville precinct	339	
Malade precinct, incl. Corinne City	377	
Corinne City	277	
Davis		5,279
Bountiful, South and West prec.	1,676	
Centerville Precinct	529	
Farmington precinct	1,073	
Hooper precinct	332	
Kaysville Precinct, incl.		
Kaysville city	1,430	
Kaysville City	1,187	
South Weber precinct	239	
Salt Lake		30,352
Big Cottonwood precinct	661	
Butler precinct	165	
Draper precinct	455	
East Mill Creek precinct	371	
Farmers precinct	320	
Fort Douglas precinct	403	
Fort Harriman precinct	342	
Granger precinct	145	
Granite precinct	250	
Little Cottonwood precinct	300	
Mill Creek precinct	1,416	
North Jordan precinct	282	
Pleasant Green precinct	179	
Salt Lake City	20,768	
Sandy precinct	488	
South Cottonwood precinct	1,288	
South Jordan precinct	440	
Sugar House precinct	738	
Union precinct	484	
West Jordan precinct	857	

Table XXI (Continued)

POPULATION OF CITIES, TOWNS AND OTHER SUBDIVISIONS
1880

	Population	Total Core Population in County
Utah		18,315
Alpine precinct and Alpine City (coextensive)	319	
American Fork precinct, incl. American Fork City	1,825	
American Fork City	1,299	
Benjamin precinct	150	
Lehi precinct incl. Lehi City	1,538	
Lehi City	1,490	
Payson precinct and Payson city (coextensive)	1,788	
Pleasant Grove precinct and Pleasant Grove City (coextensive)	1,775	
Provo precinct and Provo City (coextensive)	3,432	
Salem precinct (prev. Pondtown)	510	
Santaquin precinct	715	
Spanish Fork precinct and Spanish Fork City (coextensive)	2,304	
Spring Lake precinct	157	
Springville precinct and Springville City (coextensive)	2,312	
Weber		12,019
Harrisville precinct	582	
Hooper precinct and Hooper City (coextensive)	849	
Lynne precinct, inc. part of Ogden City	873	
Ogden City (part of)	823	
Marriott precinct	243	
North Ogden precinct	956	
Ogden City precinct and part of Ogden City (coextensive)	5,246	
Plain City precinct	653	
Riverdale precinct	272	
Slaterville precinct	328	
Uintah precinct	247	
West Weber precinct	603	
Wilson precinct	344	

U. S. census of population 1880.



Settlements Along The Wasatch Front

1880

LEGEND

Not Identified by US Census	○
Hamlet Pop. Under 400	◒
Village 400-999	●
Small Town 1,000-1,999	○
Large Town 2,000-4,999	◒
City Over 5,000	●

Wasatch Mountains and two settlements--Corinne and Bear River City--were located on the west banks of the rivers. Corinne which in 1870 was a promising village of 697 people, had dropped by 60% to a population of 277. The loss of its status as the "Junction City" combined with the construction of the narrow gauge Utah Northern Railroad through Cache Valley to the mining fields in Idaho and Montana had left Corinne virtually without an economic base other than the limited agriculture of its immediate hinterland. Three Mile Creek (Perry) had a population of 263 in 1870 when railroad construction was still taking place, but does not appear on the 1880 census.

Weber County experienced substantial growth during the decade of the 70's, although only one new community--Roy--appears on the map. But, whereas ten settlements were too small to be included as separate census districts in 1870, only seven--including Roy--were not listed in the 1880 schedules. There were now five hamlets rather than three and six villages rather than three as had been listed the previous decade. The only small town--Hooper--had dropped to village size, because of the extension of the Weber-Davis county boundary which placed part of the dispersed settlers in Davis County rather than in the Hooper census district of Weber County.

The western portion of Davis County, bordering Weber County, experienced significant growth during this decade although only South Hooper was included as a separate census district. The first development of farm land was on the lower lake plains where water could be obtained from springs or artisian wells. Hooper--originally called Muskrat Springs--was dependent on spring water which was later supplemented by Weber River water brought via the Hooper Canal in 1859. Settlement spread south from Hooper across sloughs and extended to present Syracuse. In 1877 Hooper was divided

leaving the community in two counties--Hooper in Weber County and South Hooper in Davis County.[1] This no doubt accounts for the decline in population recorded in the 1880 census. The actual population remained static. It was recorded as 1,189 in 1870, and the combined population of Hooper and South Hooper was 1,181 in 1880.

Two distinct bluffs extend diagonally southeast--northwest across the lake plain, marking the old lake terraces. The higher land above the bluffs was settled slightly later and was dependent on dry farming. The Sand Ridge--the fan shaped Weber Delta of ancient Lake Bonneville--had been avoided previously except for grazing, but when dry farming proved successful, several families moved into various localities on the ridge, initiating settlement in this previously unsettled area and formed the nucleus of what became Roy, Sunset, Clearfield, Layton, Clinton, Syracuse, and West Point.[2] In 1881 construction began on the Weber-Davis County canal to bring water to the Sand Ridge country and added further impetus to its growth. Elsewhere in the county there were three small towns, one village and one hamlet.

In Utah County one new hamlet, Benjamin, appeared on the census and one new settlement, Mapleton, appeared on the map. The urban centers experienced substantial growth. There were now three large towns rather than one, while the number of small towns and villages remained the same.

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[1]Bybee, Cora Bodily, History of Syracuse 1877-1965, (Springville, Utah: Art City Publishing Company), 1965, p. 1.

[2]Jensen, Andrew, "Clinton Ward," Encyclopedic History of the Church of Jesus Christ of Latter Day Saints, (Salt Lake City, Utah: Deseret News Publishing Company), 1971, p. 149.

The number of hamlets identified by the census increased from two to three.

1890--A Watershed-divide in Mormon History

Mormon history crossed an important watershed in 1890. The Manifesto halting the practice of polygamy was issued September 25th of that year, marking the final capitulation of the Mormon hierarchy to federal pressure after nearly thirty years of legislative and court battles.

In addition to the cessation of polygamy there were other equally important changes in Mormon attitudes and practices. The cost in cash outlay of bringing immigrants from Europe and escorting them across the plains increased greatly after the completion of the railroad. No longer could it be handled through donated labor or equipment. The number of immigrants thus declined gradually through the following decades. Furthermore, the better land in Utah and neighboring states was already taken up. It was not possible to continue to absorb unlimited numbers of immigrants. By 1890, the Perpetual Emigration Fund had been discontinued and the stream of European immigrants was reduced to a trickle of individuals who could finance their own way. Shortly thereafter Mormon leaders were to conclude that it was no longer advisable for converts to immigrate to Utah even at their own expense. Thus the doctrine of the "gathering" came to an end. Henceforth, converts were advised to remain in their homeland and build up "Zion" there.[1]

Although Mormon colonization continued on a minor scale throughout the 90's and even into the twentieth century, it was definitely on the decline after 1890. Settlements had been pushed into numerous submarginal

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[1]Arrington, Great Basin Kingdom, pp. 380-383.

areas in Utah and the more promising lands in neighboring states were already claimed, Colonization had pushed beyond the United States borders into Canada and Mexico principally because of polygamy persecutions, but now there was considerable opposition within these countries to accepting unlimited numbers of Mormon colonists. Continuation of Mormon colonization at its previous scale was not practical and soon ceased altogether as far as organized colonizing companies were concerned.

During the first forty years of settlement in Utah, Mormon Church authorities played a very active role in the temporal affairs of the territory. Railroads were built, mercantile establishments organized, political parties formed, irrigation companies founded and political boundaries formed or altered at the instigation of Church authorities. The running battle between federally appointed officials in the territory and Mormon Church officials, throughout the turbulent political history of early Utah, had eroded the effectiveness and ability of the Church to direct the temporal affairs of the territory. 1890 also represented a divide in this regard. Henceforth the Church played a greatly reduced role in politics and in economic affairs. This more limited role was an absolute necessity if Utah hoped to obtain statehood.

Eighteen Ninety marked the end of an era. The Mormons had been in the Core area for 43 years--a sufficient period of time for persistent spatial and hierarchical patterns of settlements to develop. Therefore, a more detailed analysis of the 1890 pattern is in order.

Growth Patterns During the Decade of the 80's

The decade of the 80's witnessed unprecedented urban growth in the Core. Salt Lake City more than doubled its population, increasing from 20,768 in 1880 to 44,843 in 1890 (a 116% increase), while Ogden jumped

Table XXII

POPULATION OF CITIES, TOWNS AND OTHER SUBDIVISIONS
1890

	Population	Total Core Population in County
Box Elder		4,875
Bear River precinct, incl. Bear River town	321	
Box Elder precinct, Brigham City (coextensive)	2,139	
Call's Fort precinct	377	
Collinston precinct	798	
Deweyville precinct	183	
Threemile precinct	303	
Willard precinct, incl. Willard City	754	
Davis		6,751
Bountiful precinct	2,438	
Centerville precinct	532	
Farmington precinct	1,036	
Hooper precinct	282	
Kaysville precinct, incl. Kaysville City	1,088	
Layton precinct	809	
South Weber precinct	267	
Syracuse precinct	299	
Salt Lake		58,102
Big Cottonwood precinct	789	
Bingham precinct	1,101	
Bluffdale precinct	194	
Brighton precinct	224	
Butler precinct, Draper precinct, South Cottonwood precinct	2,957	
East Mill Creek precinct	287	
Farmers precinct	634	
Fort Harriman precinct, South Jordan precinct, West Jordan precinct	953	
Granger precinct	489	
Granite precinct	145	
Hunter precinct	308	
Little Cottonwood precinct	70	
Mill Creek precinct	1,534	
Mountain Dell precinct	78	
North Jordan precinct	636	
North Point precinct	157	
Salt Lake precinct	44,843	
Sandy precinct	1,065	
Sugarhouse precinct	1,054	
Union precinct	602	

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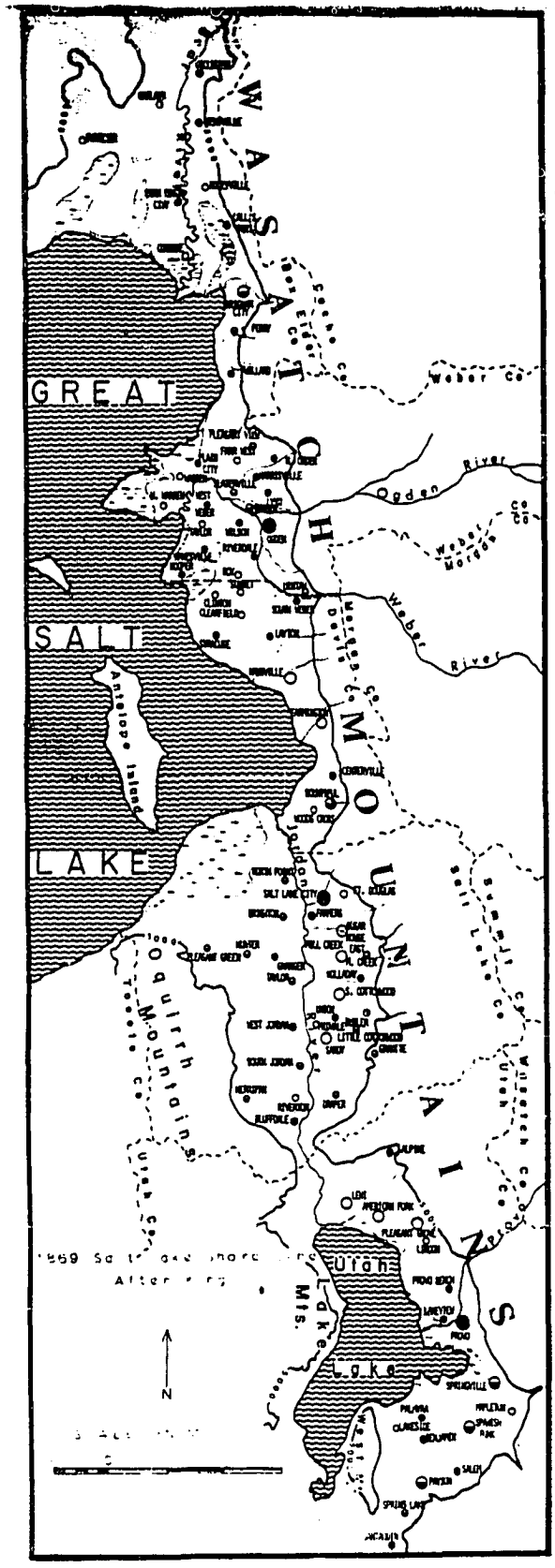
Table XXII (Continued)

POPULATION OF CITIES, TOWNS AND OTHER SUBDIVISIONS
1890

	Population	Total Core Population in County
Utah		19,562
Alpine precinct coextensive with Alpine City	466	
American Fork precinct	1,942	
Benjamin precinct	417	
Lakeshore precinct	390	
Lakeview precinct	376	
Lehi precinct	1,907	
Payson precinct	2,135	
Pleasant Grove precinct	1,926	
Pleasant Valley Junction precinct	427	
Provo Bench precinct	435	
Provo precinct	5,159	
Salem precinct	527	
Santaquin precinct	769	
Spanish Fork precinct	2,686	
Weber		21,034
Harrisville precinct	715	
Hooper precinct	778	
Kanesville precinct	248	
Lynne precinct and part of Ogden City	14,889	
Marriott precinct	223	
North Ogden precinct	758	
Plain precinct	829	
Pleasant View precinct	326	
Riverdale precinct	489	
Slaterville precinct	336	
Uinta precinct	228	
West Weber precinct	722	
Wilson precinct	493	

U. S. census of population 1890.

Figure XV.



Settlements Along The Wasatch Front

1890

LEGEND

Not Identified by US Census		○
Hamlet Pop.	Under 400	◒
Village	400-999	●
Small Town	1,000-1,999	◔
Large Town	2,000-4,999	◒
City	Over 5,000	●

from 5,264 to 14,889 (a 184% increase), and Provo grew from 3,432 to 5,159 (a 50% increase). At the same time the number of large towns increased from three to five and the number of people living in communities over 1,000 population increased from 66,893 to 91,664. The percentage of people living in communities of this size made up 74% of the population in 1880 and 82% in 1890. The population of Core settlements is given in Table XXII and their distribution by rank size is shown on Figure XIV. The only area of new settlement was in Box Elder County, where two new settlements--Thatcher and Garland--were established in 1890. The rest of the growth was in communities already in existence.

There were 24 hamlets included in the 1890 census tables, although 28 appear on the map. The reason for this discrepancy is that Fort Harriman and South Jordan were lumped together with West Jordan in the 1890 census, and Butler and Draper were included with South Cottonwood. In addition to the hamlets identified by the census, there were 18 not listed in the census, making a total of 44 hamlets. At the same time the enumeration of larger settlements included 3 cities, 4 large towns, 8 small towns and 22 villages.

One should keep in mind that the census returns identify, for the most part, census precincts rather than the actual built-up urban district of each community. The bulk of the population in most precincts was within the town or village. Nevertheless, the population figures used to classify the above settlements by size, included an unknown number of neighboring rural dwellers as well as the population within the village proper. However, one should also bear in mind that many people within each village were farmers whose daily activities took them to neighboring rural areas outside the village. In fact, the precinct may

well be a better measure of the total community than village, town or city limits, which would also be arbitrary and would include within them a number of barns, corrals, haystacks and other features normally associated with rural countrysides rather than urban areas. As a general rule census precincts recognized ecclesiastical divisions at least in name, and presumably in area. Thus a sense of cohesion or communality, centered around interaction at church and school, existed even in small rural hamlets where few urban economic functions were present. In view of these factors, the identification of community size by census precinct seems justified and the census returns provide no alternative.

Rank-Size Relationship

The pyramidal structure of rank size among Core settlements as identified by U. S. census precincts, appeared to conform roughly to Zipf's rank/size rule, which states that when the population of urban centers are ranked according to population, they will be arranged in a series 1, 1/2, 1/3, 1/4,. . .,1/n.[1] In order to measure the "goodness of fit" of rank/size among Mormon Core communities in 1890, to Zipf's theoretical model, the population and rank of each community were plotted on a double logarithmic graph with the theoretical distribution indicated by a straight line (see Figure XVI). The slope of the line is -.935 or log y = -.98 log x +7.05.[2] The major deviation from the theoretical line is at the two ends of the scale. Salt Lake City and Ogden were larger

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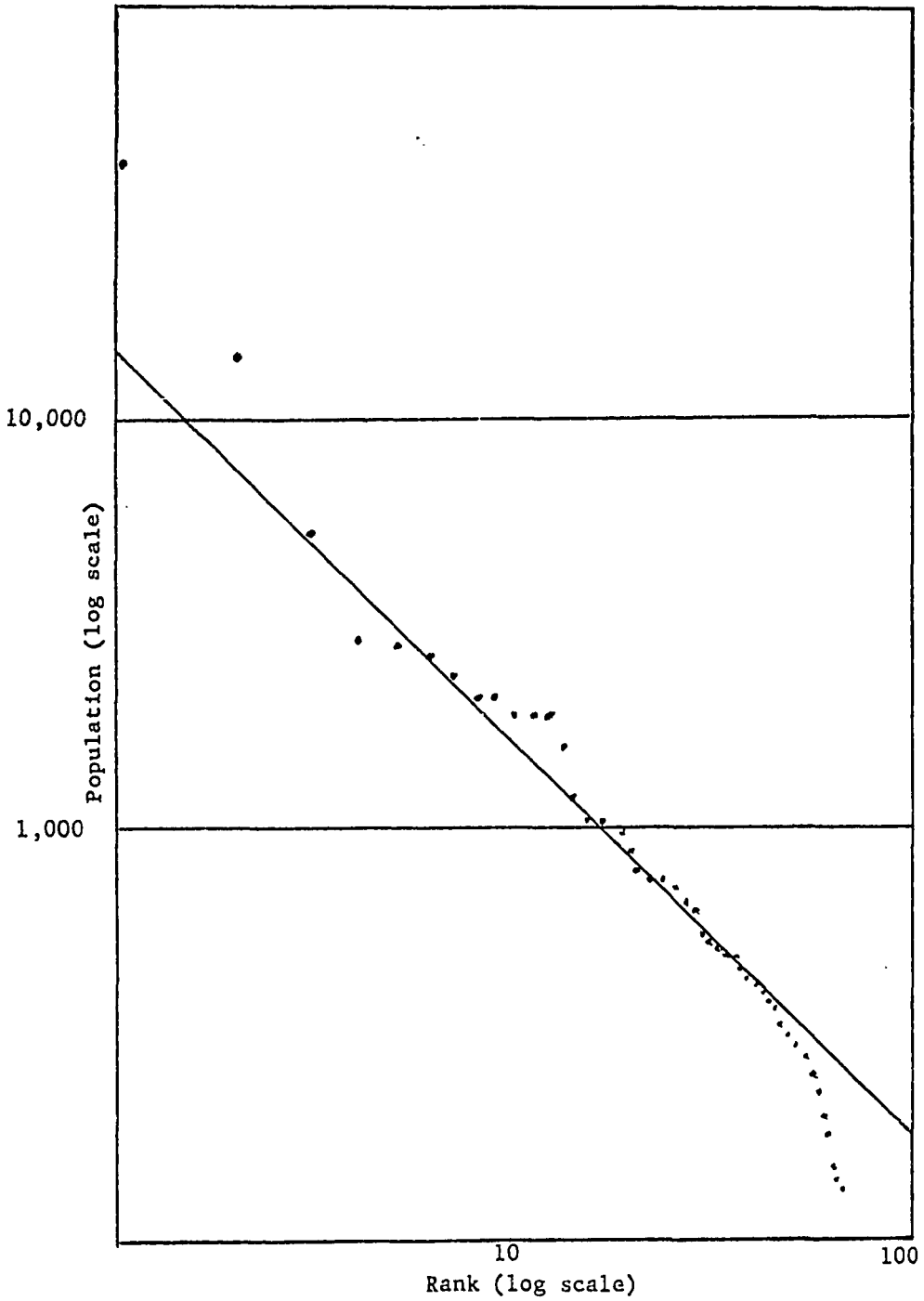
[1]James H. Johnson, Urban Geography, An Introductory Analysis, (New York: Pergamon Press, 1967), p. 99.

[2]George K. Zipf, Human Behavior and the Principle of Least Effort (Cambridge Mass: Addison-Wesley Press, Inc., 1949), p. 375.

Figure XVI

1890 DISTRIBUTION OF SETTLEMENTS IN DECREASING SIZE



than predicted, while smaller hamlets were less than predicted, and villages and towns conformed fairly closely to predicted values. Salt Lake City was three times larger than the second city--Ogden--rather than twice as predicted by theoretical rank/size rule, and Ogden was nearly three times larger than the third city--Provo. The primacy of Salt Lake City, which served as the religious, political, social and economic capital of Mormondom, was evident, as might be expected at this early stage of development. Stewart studied the relationship between first and second cities in a cross-section of 73 countries and found the median ratio between the two, to be 1/3 rather than 1/2 as predicted. Primacy, although more prevalent in small economically less developed countries than in large industrial ones, occurred in nations of highly varied stages of economic development.[1] Salt Lake City's primate position in 1890 was typical of dominantly agricultural regions. The apparent reversal of rank/size rule at the lower end of the scale is also common. Clark identifies a similar trend among the smaller hamlets of China and Hagget discusses such a distribution in India.[2]

Perhaps the most useful analysis of rank / size distribution of Core communities is a comparison through time to identify major developmental trends. The rank/size position of Core settlements was plotted on a semilogarithmic graph for the four continuous census years 1860-1890, plus 1920 for comparison (see Figure XVII). Several generalizations

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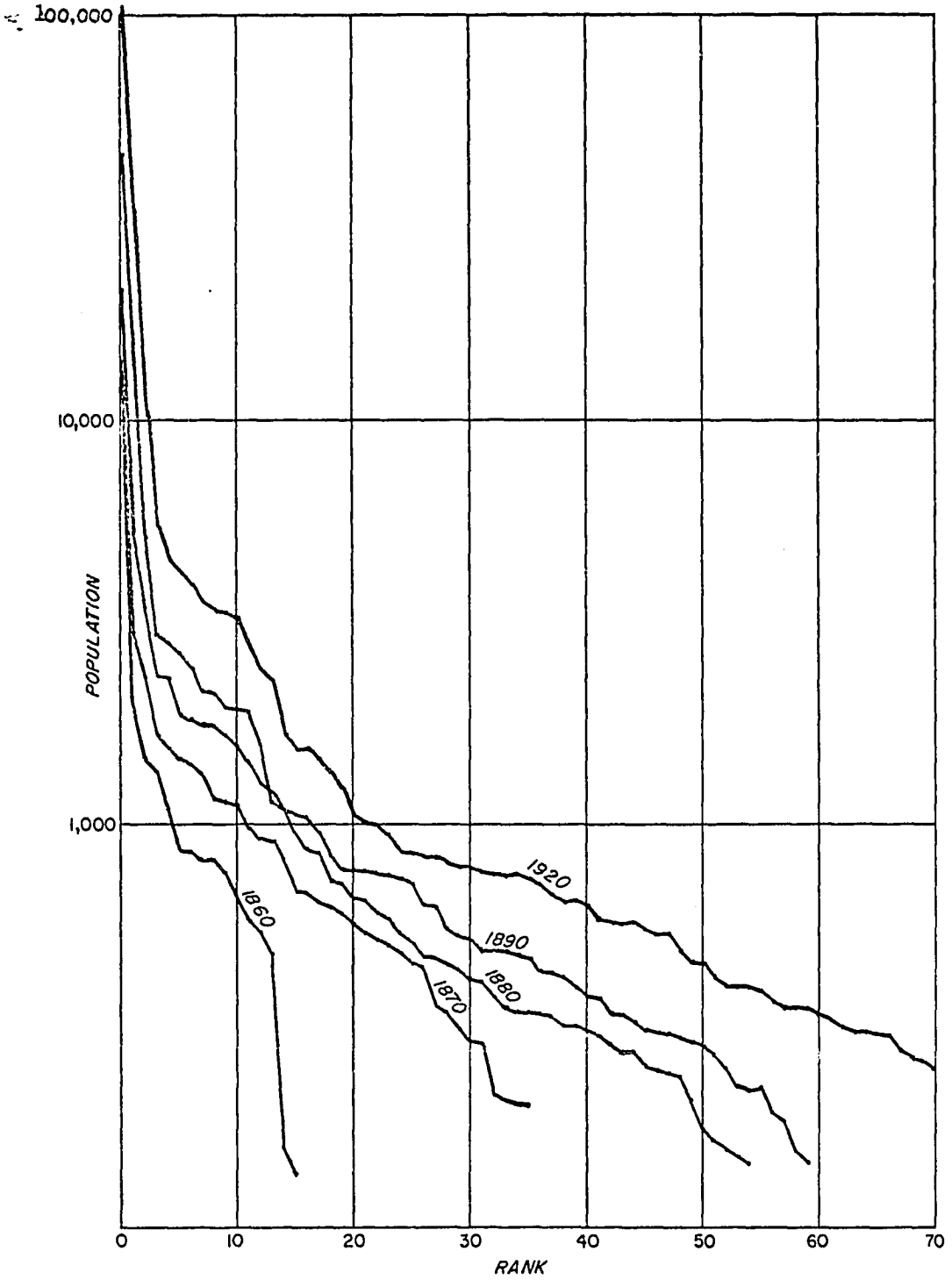
[1]C. J. Stewart, "The Size and Spacing of Cities," Geographical Review, Vol. 48 (April, 1958), p. 224.

[2]Collin Clark, Population Growth and Land Use (New York: St. Martin's Press, 1967), 318-320; and Peter Haggett, Geography: A Modern Synthesis (New York: Harper & Row, 1972), p. 285.

Fig. XVII

Ranks and Sizes of Core Communities



become evident from the graph. The primacy of the first three cities remained constant throughout the 60 year period with very little variation in the slope of the line for the first three cities, even though Ogden and Provo exchange places between 1860 and 1870. The increasing number of communities of intermediate and smaller size is evident in the decreasing slope of the lower position of the line through time. The slope changed significantly between 1860 and 1870, which was a decade that witnessed a substantial growth in the number of settlements as well as significant growth within those communities already in existence. That basic trend continued in subsequent decades with a deepening curve in the center portion of the line becoming evident by 1920 indicating that growth in smaller villages and hamlets was occurring at a slightly higher rate than among larger villages and towns. The occasional staircase appearance of the lines represent substantial breaks in community size with a series of similar size communities next in order. The staircase effect tends to smooth out in time as the breaks in community size become less pronounced.

Spatial Patterns in 1890

The spatial organization of Core settlements is also significant. As shown in Chapter III, the establishment of settlements soon emerged as a closely spaced uniform pattern as determined by nearest neighbor analysis. Did that pattern continue through the next four decades and did a spatial hierarchical pattern emerge that resembles central place theory in spite of the corridor nature of the distribution and the differences in physical environment and availability of water? These seem to be important questions in developing a better understanding of the settlement process. In order to investigate these questions, a nearest neighbor measurement was made for the settlements of each rank shown on Figure XV. The actual

measurements are given in Appendix I and are summarized in Table XXIII.

Table XXIII

NEAREST NEIGHBOR MEASUREMENT IN MILES
FOR SETTLEMENTS OF EACH RANK
1890

	Hamlets	Villages	Towns	Cities
Mean	3.5	6.8	9.9	35.3
Variance	3.73	34.85	236.39	164.15
Standard Deviation	1.93	5.90	15.37	12.81

It is evident from the above table that hamlets were found at quite uniform distances from one another. It is perhaps worthy of note that the average distance between hamlets--3.5 miles--is greater than the average distance between the initial settlements--2.8 miles—measured for 1850. As settlements spread greater distances north and south along the Core, there was also greater distance between settlements. This may not be as significant as the mean distance between hamlets in 1890 would indicate, however, since a number of hamlets were closer to a village or town than to another hamlet--a fact that is ignored by a measurement of distance from hamlet to hamlet. Still hamlets were by far the most numerous category and on the average were closer to one another than to settlements of a different rank. The low variance and standard deviation indicate that there was considerable uniformity in their spacing.

Villages were also fairly consistent, but the greater standard deviation indicates that they were not spaced as regularly as the hamlets. Towns were the most unevenly spaced of all categories with a standard deviation of 15.37.

The degree of uniformity indicated by Table XXIII raises the question

of conformity to Christaller's hexagonal pattern, or of Loch's modified model, even though settlement spread in a linear pattern along a relatively narrow corridor more in keeping with Whebel's findings. Using Christaller's k=3 theoretical model, expected distances between settlements of the next highest order should increase at the rate of $\sqrt{3}$ or 1.73205 times the distances between settlements of the next lower range limit.[1] Using this formula the expected distances for each rank were calculated and appear in Table XXIV along with the observed distances.

Table XXIV

EXPECTED AND OBSERVED MEAN DISTANCES BETWEEN SETTLEMENTS IN THE MORMON CORE

Using Christaller's K = 3 Theoretical Model

Rank	Expected	Observed
Hamlets	------	3.5
Villages	6.06	6.8
Towns	10.50	9.88
Cities	18.19	35.33

A χ^2 goodness of fit test was used to determine if there was a significant difference between the expected and observed values using the formula $\chi^2 = \Sigma \frac{oi-ei^2}{e_i}$ where the symbols o_i and e_i represent the observed and expected frequencies, respectively for the ith cell.

$\chi^2 \quad \Sigma \frac{(6.8 - 6.06)^2}{6.06} + \frac{(9.88 - 10.50)^2}{10.50} + \frac{(35.33 - 18.19)^2}{18.19} = .0904 + .0366 +$

$16.1506 = 16.2776 \qquad \alpha .05 = 5.991$

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[1] W. Christaller, Central Places in Southern Germany, translated by C. W. Baskin (Englewood Cliffs, New Jersey: Prentice Hall, 1966), pp. 65-69.

Since the χ^2 value is greater than the rejection level--5.991--one must conclude that there is a significant departure from the expected values. It should be pointed out that the greater than predicted distance between cities is the cause of this departure from the expected. If one goes to the fifth order place in Christaller's hierarchy, the predicted distance would be 31.51. This is close to the observed distance between cities. If the fourth order place is eliminated and the fifth order place replaces it in the goodness of fit test, the value is .0944 + .0366 + .1212 = .1578 which is well within the rejection level. If the test is completed only for villages and towns the χ^2 value is .0306 and the rejection level for α.05 is 3.847 indicating that mean distance between hamlets, villages and towns does fit the Christaller theoretical pattern rather well.

Once again, the original rank classification was chosen arbitrarily and was designed to classify settlements into groups of similar size in order to facilitate the study of growth patterns. It was based strictly on population and did not consider urban functions. It was assumed that there was a positive correlation between the number of urban functions and the size of the population. Such an assumption needs verification in view of the method of recording census data and the rural nature of Utah settlements, many of which may have had few, if any, central place functions. The author was able to locate copies of Sloan's Utah Gazetteer published in 1884 and 1888, which contained business directories for Utah communities. The publisher prefaced the 1884 directory with the following comments:

> In the preparation of the following Business Directory, the publishers of the Gazetteer have been at considerable pains in collecting the names, occupations and trades of the several business houses and people. Every village, town and city of the Territory has been visited and the information

> obtained direct. As a reference for mercantile men it will be found the most complete and accurate ever published.[1]

In spite of the above statement, a number of small hamlets do not appear in the directory. Their absence may have been because their population was considered too small or scattered to be identified as a distinct community or because no businesses existed in these hamlets, in which case churches and/or schools would constitute the only central place functions.

One might expect that a pyramidal structure of urban functions would be exhibited in the selective distribution of specific businesses, i.e. doctors, lawyers, and bankers would be found in larger towns and cities but not in hamlets, while blacksmith, shoemakers and grocery stores might be found in most, if not all, communities regardless of size. The presence or absence of certain index businesses might serve as a key to the hierarchical position of a particular community in its role as a center for the exchange of goods and services.

An analysis of businesses listed in the Sloan Directories failed to identify any such recognizable pyramidal pattern. While bankers, lawyers, and physicians were present in the three larger cities--Provo, Ogden and Salt Lake City--their presence or absence in towns and villages under 5,000 inhabitants offered little help in identifying a hierarchy of functions. Only one community--Corinne--had a bank, and many of the larger villages (e.g. Brigham City, Bountiful and Springville) had no doctors, yet Benjamin with a population of 150 in 1880 had two physicians listed in the 1884 directory. Blacksmiths, coopers, millwrights, wheelwrights, harnessmakers and shoemakers were common businesses but their inclusion or absence was

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[1]Sloan, Utah Gazetteer, 1884, p. 302.

Table XXV

RELATIONSHIP BETWEEN THE POPULATION OF CORE COMMUNITIES LESS THAN 5,000 AND THE NUMBER OF BUSINESSES LISTED IN SLOAN'S DIRECTORIES

	Population		Number of Grocery, Merc. & General Stores		Total number of Businesses	
Town	1880	1888	1884	1888	1884	1888
Alpine	208	350	1	1	4	2
Am. Fork	1825	2300	9	5	32	21
Benjamin	150	417	2	2	5	4
Big Cottonwood	661	789	1	3	2	3
Bountiful	1678	2300	6	3	15	13
Brigham City	1877	2600	8	9	22	46
Centerville	529	600	2	2	7	6
Call's Fort	Not	160	reported	1	in 1884	1
Collinston	100	100	0	0	1	1
Corinne	277	200	7	3	20	21
Deweyville	339	250	2	1	6	2
Draper	455	700	2	2	7	8
Farmington	1073	1000	3	4	17	17
Harrisville	582	625	4	3	6	6
Hooper	849	1500	2	2	4	5
Kaysville	1187	1500	3	3	19	15
Layton	243	809	2	2	4	4
Lehi	1538	2000	4	5	10	23
Lynne	873	included	2	with Ogden	4	in 1888
North Ogden	956	1500	2	4	12	18
Payson	1788	2000	6	6	58	66

Table XXV (Continued)

Town	1880	1888	1884	1888	1884	1888
Plain City	653	800	3	3	10	5
Pleasant Grove	1775	2100	3	6	14	28
Salem	510	500	1	1	5	6
Sandy	488	500	5	5	25	19
Santaquin	715	600	1	4	2	6
Spanish Fork	2304	2000	4	4	13	24
Slaterville	Not	300	reported	1	in 1884	2
S. Jordan	440	150	0	1	1	3
S. Cottonwood	1288	Not reported	6	separately	10	in 1888
Spring Lake	157	Not	1	reported	4	in 1888
Springville	2312	2500	8	7	37	33
Taylorsville	282	300	2	1	6	6
Uintah	247	400	2	2	3	2
West Jordan	857	1400	3	3	7	8
Willard	412	650	1	2	2	5

1880 Population Data taken from published U. S. census returns.

1888 population data and all data relative to businesses, taken from Sloan's Utah Gazetteer 1884 and 1888.

too erratic to identify a hierarchical structure. The most ubiquitous commercial establishments were cooperative mercantile, grocery and general stores. At least one store was found in virtually every community and in most cases additional business or professional offices were present. Consequently, the number of stores and total number of businesses listed in the directories was considered a more valid index of the degree of central place functions than any particular profession or business. A summary of the population and businesses of the Core communities in 1884 and 1888 are included in Table XXV. The population in 1880 is taken from the U. S. census returns, while the 1888 population figures represent Sloan's estimates for that year (no estimates of population were given in 1884). If no estimate was given in 1888, the 1890 census figures were used.

From the data included in Table XXV, correlation analyses were computed for both 1884 and 1888 between the populations of the various Core settlements and the number of stores in each community. A second correlation was computed for both years between the population and the total businesses listed in the directories. The first correlation between 1880 populations and the number of general stores in 1884 produced an R value of .06778--a very weak positive correlation. On the other hand, the second correlation between populations and the total businesses produced an R value of .65138--a rather strong correlation. The 1888 correlations verified the latter result, with a correlation between populations and total businesses producing an R value of .72066. Of course, as one might expect there were exceptions to the general trend. Corinne, for example, had a population of only 277 in 1880, yet 20 businesses were listed in the directory of 1884. As shown with earlier comparisons, Corinne was clearly

an anomaly ,whose orientation was towards the railroad not its rural surroundings.

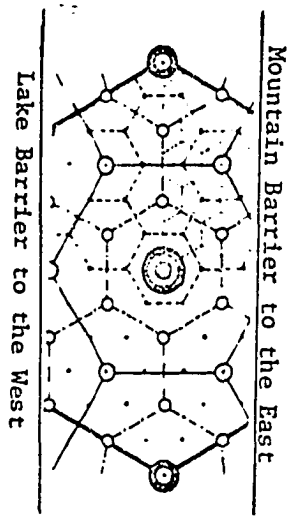
The above results verify the original assumption that there was a relatively consistent strong correlation between urban functions, as measured by the total number of businesses in a community, and the population. If Corinne is excluded, the mean number of businesses listed for the 7 hamlets in 1888 (communities less than 400) is 2.43 with a standard deviation of 1.72, while the mean for the 12 villages (communities between 400 and 999) was 6.16 with a standard deviation or 4.34, and the mean for the 12 towns (communities between 2,000 and 5,000) was 26 with a standard deviation of 16.10. The original classification of settlements based on settlement size was arbitrary but does represent a basic ranking of urban functions as well.

The 1890 analysis of spatial settlement pattern in the Mormon Core was not intended as a test of the Christaller hypothesis of Central Place Theory. Settlement here was restricted on the east by mountains and on the west by lakes, deserts and mountains. These barriers produced a linear pattern of settlement along a narrow corridor more in keeping with Whebell's Corridor Pattern. The area differed markedly from Christaller's isotropic plain. Nevertheless, within this corridor the arbitrarily ranked settlements of the Mormon Core did occur in a pyramidal structure of settlement size and when ranked in descending order corresponded with similarly ranked communities elsewhere in the world. Furthermore, the mean distance between hamlets, between villages and between towns came remarkably close to the predicted values using the $\sqrt{3}$ of the distance between the lowest order of settlement size. It appeared, therefore, that there might be a close relationship with Christaller's hexagonal pattern with barriers

eliminating the expansion westward or eastward,as shown in Figure XVII below.

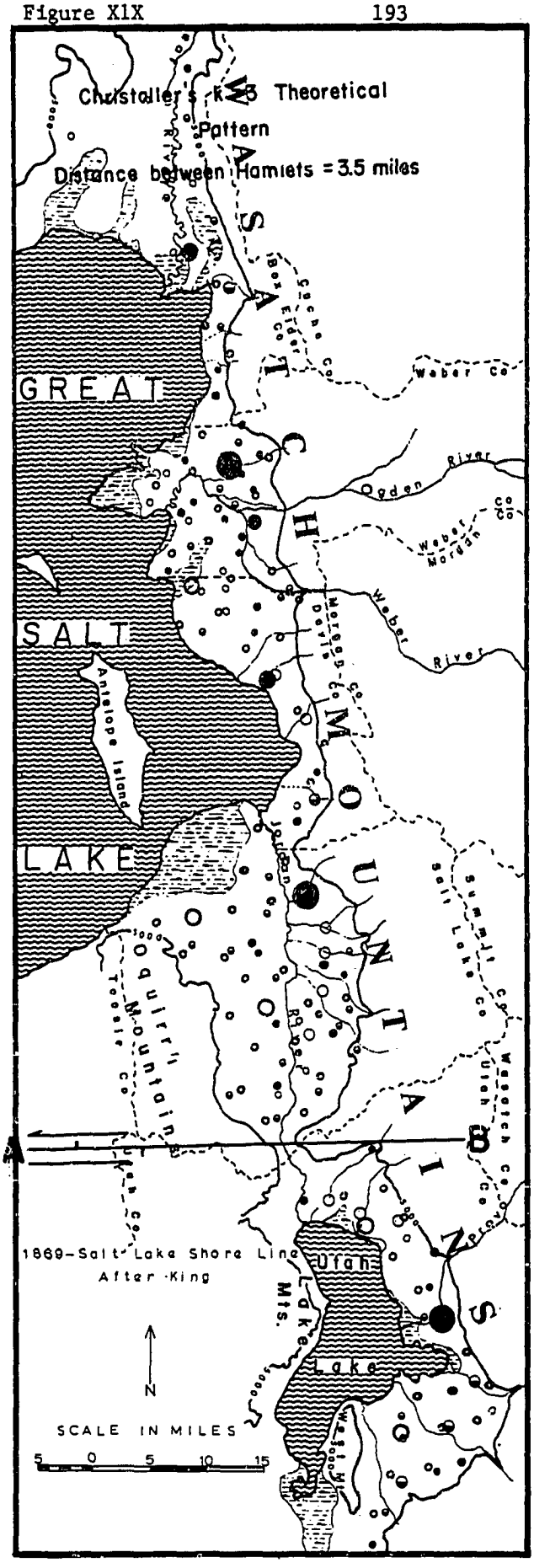
Fig. XVIII

CHRISTALLER HYPOTHESIS



Consequently, an overlay with Christaller's hexagonal hierarchical pattern was prepared with a scale between hamlets that matched the mean distance between hamlets in 1890. The overlay was then placed over the 1890 settlement map so that the largest city was directly over Salt Lake City. In Utah Valley the entire pattern was shifted to the east along line A-B approximately six miles because of the position of Utah Lake (see Figure XX). In order to choose corresponding symbols for the theoretical pattern with the actual one, large and small towns were lumped together and shown as clear circles.

Since the physical constraints of climate and landforms along the Wasatch Front do not conform to Christaller's isotropic plain, one would not expect a very close correlation between the actual pattern of settlement in the Mormon Core and Christaller's theoretical one. Yet the pattern on the overlay matches the pattern on the map remarkably well. The uniform pattern of location matches better than the rank size pattern,



Settlements Along The Wasatch Front

1890

LEGEND

Not Identified by US Census	○
Hamlet Pop. Under 400	◔
Village 400-999	●
Small Town 1,000-1,999	○
Large Town 2,000-4,999	◒
City Over 5,000	●

i.e. in a number of cases, towns or cities in the theoretical pattern correspond with communities of lower rank in the actual one. Christaller's fourth order communities--B places--are absent and his fifth order G places--correspond very closely to the three cities--Ogden, Salt Lake City, and Provo. It appears that the corridor development of settlement does not negate the importance of central place but does tend to lengthen the distance between places of the higher orders. The distance factors which Christaller identified as causative forces in the development of uniform spacing are still of major importance in a corridor arrangement of settlements in a semi-arid region dependent on irrigation.

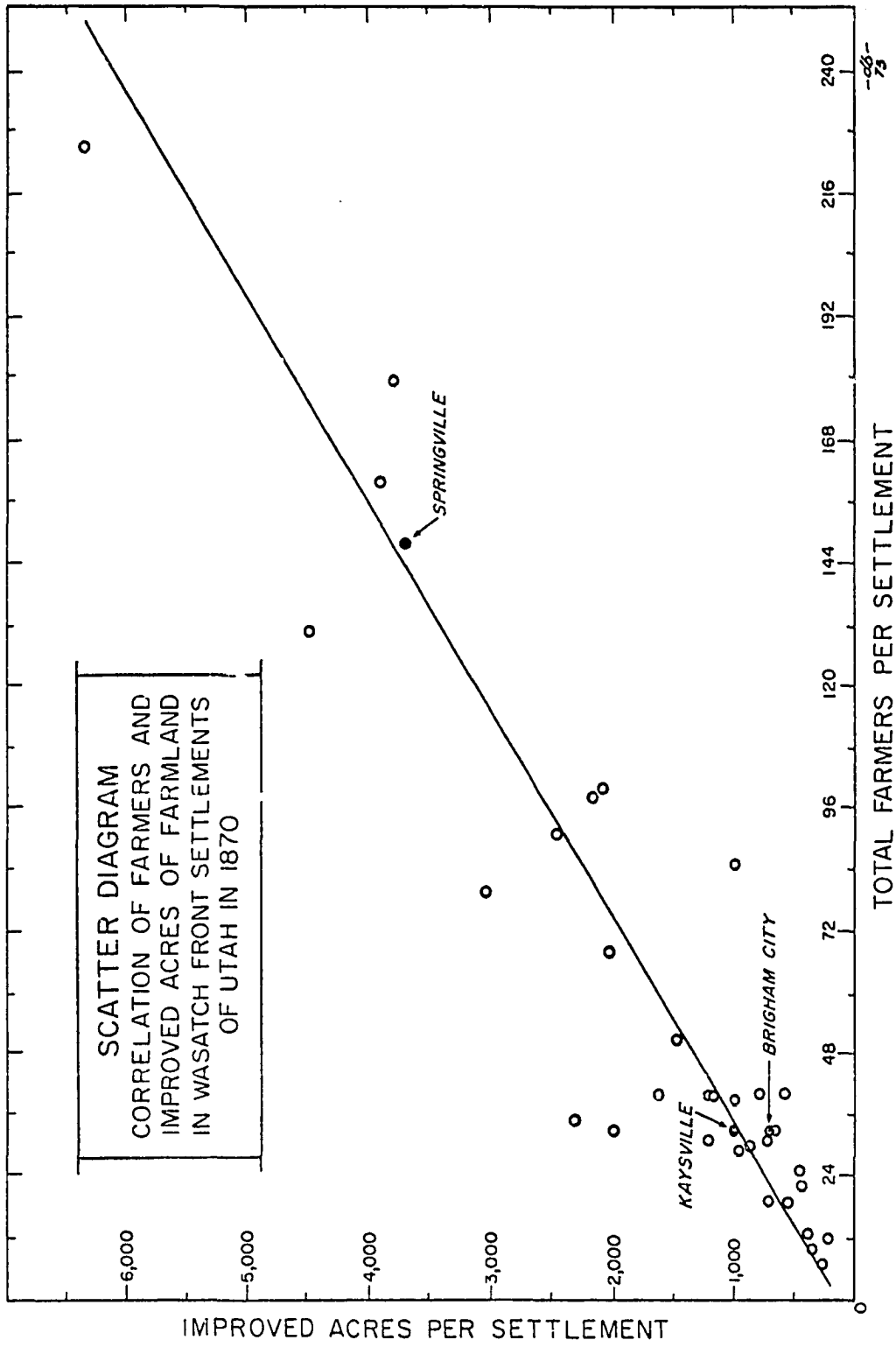
CHAPTER V

A CLOSE UP LOOK AT SELECTED SETTLEMENTS

In order to gain greater insight into the process of settlement along the front, three communities were chosen for detailed examination to learn more about the sequence of events in the establishment and growth of Mormon settlements. The major objectives of this investigation were (1) to assess the role of Church direction in the initial establishment of the community and its subsequent growth, (2) to examine the composition of the population, (3) to determine the nature of man's occupation of the land with particular attention to identifiable temporal and spatial patterns of acquisition of land titles, and (4) to assess, at least to a limited degree, the persistence of rural settlers in these communities.

The author deemed it wise to choose one settlement in the north, one near the center and one in the south of the Mormon Core area for detailed examination. These settlements should also typify the general relationship between Core communities and the land. It seemed a reasonable hypothesis that a fairly high correlation existed between the number of farmers in each community and the amount of agricultural land. This hypothesis was tested by running a correlation analysis between the total number of farmers and acres of improved land in each of 37 Core communities included in the agricultural census of 1870. The results showed a correlation of .865 and are shown in the scatter diagram in Figure XXI. The three settlements selected for a close up study are identified on the diagram and are all near the "best fit line." Thus they not only represent a northern, central and southern community in the core area, but are also typical of farm communities

Figure XX



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all along the front. Brigham City was atypical in its ethnic composition since it was the only Core settlement with a majority of Scandinavians but this unique characteristic was an added reason for including it for closer investigation.

Since the close up examination of Brigham City, Kaysville and Springville represents the conclusion of a broad investigation that has already grown too long, it will be limited to the general questions mentioned above and will attempt to define broad trends rather than thoroughly investigate each anomaly that might become apparent.

PART I

BRIGHAM CITY

First Settlement

The factual details regarding the initial settlement in what is now Brigham City are lost in obscurity. The first settlers recorded little information about the people and events involved in the founding of this new community. Apparently there were few if any daily journals or diaries kept, or if so they have been lost or remain in private collections. They are not included in the large collections of diaries and journals at the L.D.S. Church Archives, the Utah State Historical Society, or the University of Utah library. It was left to later historians to piece together the history of the settlement from interviews with early settlers and meager church or public records. The few histories that have been compiled are sketchy and often disagree with each other in details.

Nevertheless, a few generalizations can be made with reasonable assurance of accuracy. (1) The first settler, William Davis, apparently acting on his own, looked over the area in 1849 and decided to return

with his family and establish himself on Box Elder Creek. A small handful of additional settlers either accompanied or followed him to the location in the spring of 1850.[1] (2) Soon after the first settlers were established, a temporary fort was constructed for protection against Indian attack. This fort may have been constructed upon the advice of Church officials, as indicated by a letter from H. C. Kimball and Willard Richards to Brigham Young: "We understand that Samuel Campbell and others have gone north near the Box Elder to farm. If so you will know and do the best you can for their information and relief and for all your scattered inhabitants to gather them into places of safety, till peace may be restored."[2] (3) The scattering of early settlers to places of their own choosing was apparently a common practice and was a cause of serious concern to Church officials during periods of Indian difficulty; "you will know and do the best you can for their information and relief and for all your scattered inhabitants." (Emphasis added.)

Construction of the First Fort

The first fort, called Davis Fort, about a mile northwest of the present city center, was built in the fall of 1851 on the clay soils of the lake plain beyond the edge of the alluvial fan at the mouth of the canyon. It measured sixteen rods in length from north to south and about six rods in width from east to west. Immediately south of the fort a log school house was erected to provide for the educational needs

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[1]For a discussion of the founding of Brigham City, see "Brigham City Ward History," MS, L.D.S. Church Archives, pp. unnumbered; Bancroft, History of Utah, pp. 317-318; and Tullidge, Tullidge's Histories, (Salt Lake City: Juvenile Instructor Press, 1889), Vol. 2, p. 290.

[2]Journal History, Sept. 17, 1850.

of the new community. Water was supplied by a stream of fresh water conducted through the center of the fort. The clay soils of the lake plain did not prove very satisfactory in the compact quarters of the fort. Heavy traffic produced large quantities of dust and the high water table in the spring meant that there was inadequate drainage over much of their farm land. To make matters worse, the houses soon became infested with bed bugs and other vermin. In the spring of 1852, the settlers broke up the old fort and moved out onto their recently surveyed farms.[1]

Construction of Second Fort

When the first settlers broke up the old fort and moved out onto their farms in the spring of 1852, their numbers were augmented by the arrival of several new families that year. The dispersed settlement was short lived, however. In July 1853, an order came from Brigham Young to fort up again owing to perceived Indian dangers. Consequently a second fort was constructed near the present center of Brigham City. This fort occupied what is now a block and one half, extending north and south about 25 rods and 7 or 8 rods east-west. Later the fort was extended about 20 rods southward to accommodate new settlers and a log school house was added in the fall of 1853 immediately south of the addition to the fort. The log houses were built adjacent to one another so that their walls constituted the outer edge of the fort on three sides with the south end of the fort being open. Two rods or less were alloted to each family. Originally the first settlers intended to erect a rock wall around the entire area including the corral and stock yards, but this

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[1]"Brigham City Ward History", pp. unnumbered.

plan was never carried out as the Indian danger soon passed.[1]

Ecclesiastical and Political Organization

Although the new settlement at Box Elder was apparently settled by individuals acting under their own volition, Church officials were quick to provide an ecclesiastical organization to care for the spiritual and temporal needs of the community. William Davis was made the first presiding elder for a newly established branch and was later, April 31, 1852, ordained Bishop over the Box Elder Ward, which at that time was under the jurisdiction of Lorin Farr, the Stake President of the Weber Stake.

The new settlement on Box Elder Creek represented the northern outpost of the Mormon Core Area. Located at the northern end of the Great Salt Lake, it formed an important gateway for traffic moving westward around the north end of the lake, northward into the Snake River Valley, or eastward into Cache Valley. Church leaders consequently placed great significance on this northern outpost as is evidenced by the appointment at the October Conference in 1853 of Lorenzo Snow, one of the twelve apostles, and later President of the Church of Jesus Christ of Latter-Day Saints, to take direct charge of the settlement. No other core settlement except Salt Lake City, could boast of such an honor. At this conference, Snow was instructed to choose 50 families to take with him to strengthen the settlement at Box Elder. On Snow's first trip to the settlement, he found that all of the water coming from Box Elder Canyon was already appropriated and that the existing settlers considered it only sufficient to supply the needs of the inhabitants already there. Snow persuaded them to relinquish their right to the water and agree to

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[1]Brigham City Ward History", pp. unnumbered.

a new division which would include new settlers that would be arriving.[1]

The following spring, 1854, new settlers began arriving at the Box Elder settlement in increasing numbers, although Snow himself did not move to the settlement for another year. How many of these settlers comprised part of the fifty families to be selected by Snow is impossible to determine. Indeed it cannot be shown by historical record that Snow ever selected fifty families to settle at Box Elder, but it seems safe to assume that he did, or at least chose some specific families and approved the general growth of the settlement by other families which he may not have selected personally.

At the time of his arrival in May, 1855 to take up permanent residence in Box Elder, Snow found a growing population but felt that the community was languishing for lack of vigorous leadership. His arrival resulted in a flurry of activity and planning. The name of the settlement was changed from Box Elder to Brigham City in honor of Brigham Young; a city was laid out and a new era of construction begun.[2] Box Elder was soon separated from the Weber Stake to form a new ecclesiastical stake and political county under Snow's direction.

Population Growth and Composition

On October 4, 1853, a company of Scandinavian immigrants including 207 souls arrived in Salt Lake City under the direction of John E. Forsgren, son-in-law of William Davis, the founder of the Box Elder settlement. Presumably because of family ties, Forsgren elected to settle at

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[1]LeRoi C. Snow, ed. "Biographical Notes on Lorenzo Snow, typescript, Lorenzo Snow Papers, Box 4, L.D.S. Church Archives.

[2]Eliza R. Snow, Biography & Family Record of Lorenzo Snow (Salt Lake City: Deseret News Press, 1884), pp. 261-62.

Box Elder and a substantial number of the Danish immigrants decided to accompany him. They arrived in the fall of 1853.[1] According to the Bishop's Report at the October Conference, there were 204 souls belonging to the Church living on Box Elder Creek.[2] This enumeration may not have included the Forsgren group, however, since they were just becoming settled at the time of the conference. At this conference Lorenzo Snow was called to take charge of the new settlement, and to take fifty additional families with him.

1854 witnessed a substantial growth in the population, perhaps because of Snow's recruitment. In addition to more Scandinavians a small Welsh colony from Salt Lake City arrived.[3] Just how many were included in the Welsh group is unknown, but they did comprise a substantial portion of the population at the end of the year. Wilford Woodruff, who visited Box Elder in December of 1854, writes: "Dec. 5, 1854, I rode to Box Elder and preached that evening in the schoolhouse. Sixty families are located here, the majority of whom are Welchmen and Danes and mostly poor."[4]

In the years that followed many additional Scandinavians, particularly Danes, settled in Brigham City or elsewhere in Box Elder County. Some may have come in 1855 and 1856 at the request of Lorenzo Snow but most seem to have been attracted because of friends or relatives living there. There was no corresponding increase of Welsh immigrants

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[1]Lydia Forsgren, History of Box Elder County (Salt Lake City: Daughters of Utah Pioneers, 1937), p. 61

[2]Deseret News, Oct. 15, 1853.

[3]Tullidge, Tullidge's Histories, Vol. 2, p. 291.

[4]"Brigham City Ward History," pp. unnumbered.

to the settlement even though they comprised such a substantial element of the initial settlers in Box Elder Fort. Immigration from Wales to the territory of Utah was many times less than that from the Scandinavian countries. British born immigrants outnumbered the Danish born by 58% to 38% in 1860 but by 1870 Brigham City had 297 residents who were born in Scandinavia compared to 178 born in the British Isles. (See Table XII page 129) If the inhabitants born in Utah, who would be under 20 years of age were subtracted from the total population in 1870, Scandinavians made up 46% of the population while the British Isles accounted for 27%. It is not known how many of those from the British Isles were Welsh.

Land Acquisition

Since there was no government land office established in Salt Lake before 1860 and the extension of public land policies to Utah did not occur before that date, the Mormon settlers devised their own system for dispensing land titles. In the beginning land was surveyed and granted to individuals in Salt Lake City under the auspices of Church officials without any civil machinery to give it legality. But when the provisional government of the State of Deseret was organized a surveyor-general was appointed to take over the responsibility of surveying and recording land transactions. In 1850 this was made an elective position by the following act:

> Sec. 1. Be it ordained by the General Assembly of the State of Deseret: That a Surveyor General for the State shall be elected by the General Assembly, whose term of office shall be two years, and until his successor is qualified . . .
> Sec. 3. The Surveyor General shall keep his office at the seat of government, and keep a record of all surveys made by himself or reported to him by other surveyors, in a book suitable for the purpose. He shall also have a general superintendence and supervision of all surveys of land made within the State . . .
> Sec. 5. All surveys made in this State shall be made to correspond with the original survey of Great Salt Lake City, and in all new

surveys certificates approved by authorized surveyors shall be considered title of possession to the holding of the same for the amount of land therein described.
Approved March 2nd, 1850.[1]

In keeping with the above act, Henry G. Sherwood, the surveyor-general came to the Box Elder settlement in May of 1851 and surveyed farm lands. The following is a sample of the deeds issued:

Box Elder Survey, Weber Co. U. T.

George F. Hamson	Lot No. 37, of 40 acres Lot No. 38, of 40 acres	Fees paid Surveyors

Recorded in the State Office, June 17, 1852.
Henry G. Sherwood, Surveyor.[2]

The farms ranged from 40 to 80 acres. Unfortunately the plats for this survey have not been preserved, and it is not possible to locate the above properties, nor the land area included in the Sherwood survey. There was no charge for the land, but a small fee was charged to cover the cost of surveying. A new survey of the city and additional lands was not made until after Snow's arrival in 1855. At that time Jessie W. Fox, the new surveyor-general, came up from Salt Lake and helped Snow lay out a city in half acre lots. The general plan remains substantially unchanged today (see Figure XXI). The Brigham City plat differs substantially from Salt Lake City. The blocks were rectangular rather than square; north and south streets were wider than east-west streets; all of the blocks were not the same size, and the lots were generally one half acres rather than 1 1/4 acres, as they were in Salt Lake.

A Big Field Survey was platted northwest of the city with lots of

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[1]Acts, Resolutions & Memorials Passed at the Several Annual Sessions of the Legislative Assembly of the Territory of Utah, (Great Salt Lake City: Joseph Cain, Public Printer, 1855) p. 62.

[2]"Brigham City Ward History", pp. unnumbered.

several size categories, including 2 1/2 acres, 4 1/2 acres, 5 acres, 7 1/4 acres and 10 acres. The record of deeds shows that several land holders owned more than one lot but these were the exception rather than the rule. The mean size land holding in 1857 was 7.97 acres with the largest holding being 27 acres and the smallest 2 1/2 acres but the most common size per land owner was a single 4 1/2 acre lot.[1] The common practice for distributing lots, which presumably applied to the Brigham City Big Field Survey, were to number each lot on a piece of paper which were in turn drawn at random from a hat by each potential land holder. There was no cost for the land other than a small fee paid to the surveyor.[2] The author was unable to determine why some families received more than one lot. They may have been larger families who were deemed to need more land to sustain themselves; it may have represented differences in the quality of the land; or it may be that some land owners sold their lots to others. At any rate all of the farms in the Big Field were small. Some larger farms of 20 to 100 acres in size are recorded in the Deed Book for areas more distant from the city, but there were few farms in this category. As with the Sherwood Survey of 1851, the plats for the Fox Survey have not been preserved. Thus there is no way of knowing where a particular lot recorded in the Deed Record was located. The present Five Acre Plat northwest of the city center probably includes the land incorporated in the original Big Field Survey.

A federal survey of the district was completed in 1856, which shows

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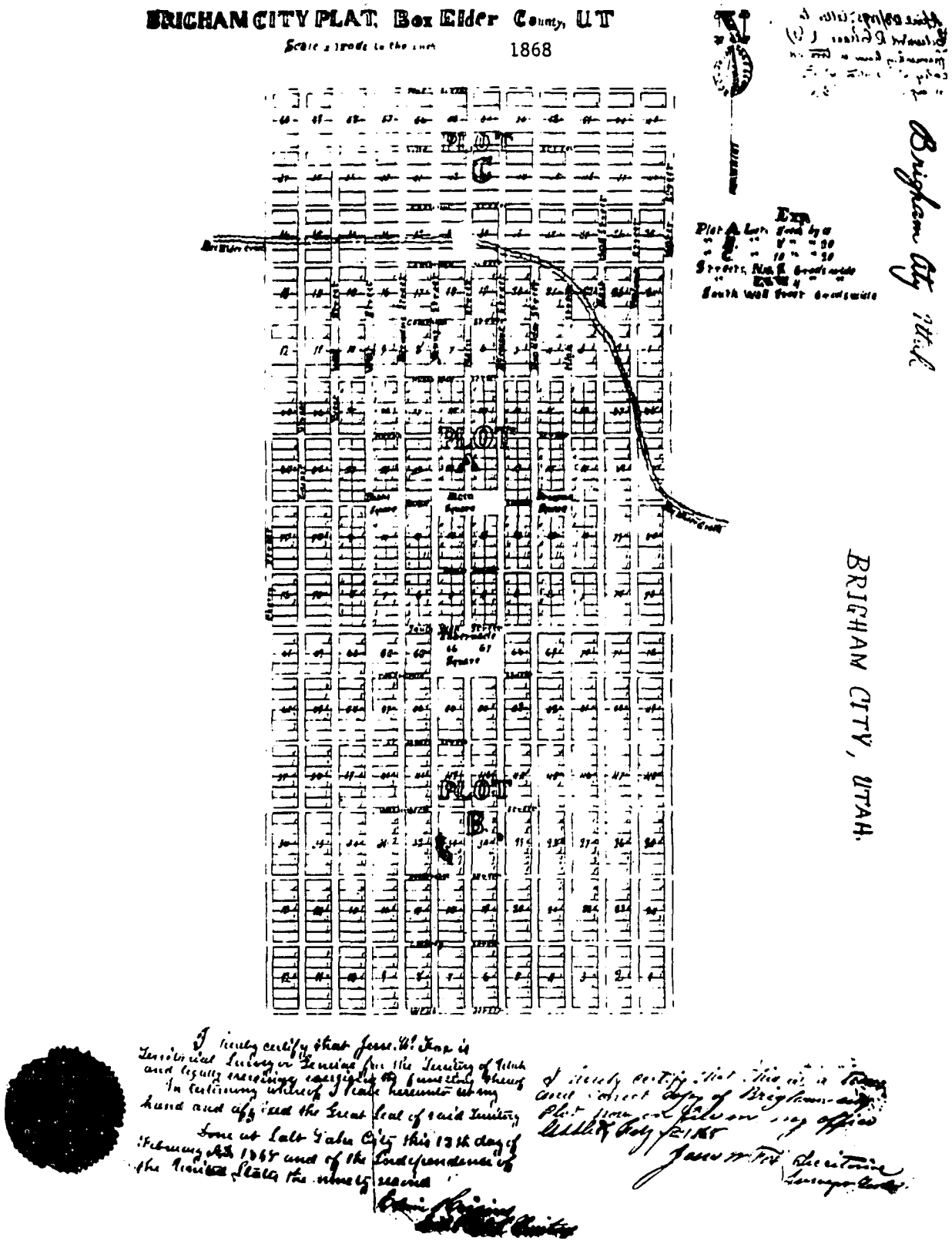
[1]Computed from the manuscript Deed Records, Book A, 1857 Box Elder County Recorder's Office.

[2]Arrington, Great Basin Kingdom, p. 90.



Courtesy of National Archives

the Box Elder Fort (see Figure XXII, page 216). The survey plat included drainage and section lines but had little or no impact on the existing land system, until the federal government established a land office in Salt Lake City in 1869. At that time it became possible for the first time in Utah history to gain legal title to the land as public land policies were then extended to the citizens of Utah. Land was then identified by section, township and range rather than by lot number in a particular survey as had been practiced previously.

Land Titles and the Consecration Movement of 1855-57

One of the interesting aspects of land titles in the pre-G.L.O. period was the move in 1856 and 1857 to transfer land titles to Brigham Young, Trustee in Trust for the Church of Jesus Christ of Latter-Day Saints. A sample of these deeds as recorded by the Box Elder County Recorder follows:

> Be it known by these presents that I, Daniel Johnson residing on Lot one (1) in block two (2) of Brigham City in the county of Box Elder and territory of Utah for and in consideration of the goodwill which I have to the Church of Jesus Christ of Latter-Day Saints give and convey unto Brigham Young, Trustee in Trust, for said Church, his successors in office and assigns, all my claim to and ownership of the following described property, to wit: Lot one (1) Block two (2) containing 80 square rods as platted in Brigham City Survey.
>
> | | |
> |---|---|
> | Including fence, trees, and other improvements | $40.00 |
> | One adobe house | 60.00 |
> | Household furniture & bedding | 30.00 |
> | Two cows $60., Fowls $1., 2 guns $20. | 81.00 |
> | Wearing apparel | 20.00 |
>
> Lot 15 in Block 14 containing 4 1/2 acres as platted in the Big Field Survey, Brigham City, Box Elder County.
>
> Together with all the rights, privileges, and appurtenances thereunto belonging or appertaining; I also covenant and agree that I am the lawful claimant & owner of said property, and will warrant & forever defend the same, unto the said Trustee in Trust, his successors in office & assigns, against the claims of my heirs, assigns, or any person whomsoever.
>
> Signed Daniel Johnson
> Territory of Utah, County of Box Elder

> I, Jonathan C. Wright probate Judge of the County & Territory aforesaid do hereby certify that the signer of the above transfer personally known to me appeared this 6th day of April A.D. 1857 and acknowledged that he of his own choice executed the foregoing transfer.
>
> Signed J. C. Wright, Probate Judge (seal)

Thirty-four such entries were made for the Brigham City area, including a total of 433.75 acres.[1] These transfers were part of a consecration movement that spread throughout the Utah settlements in 1856 and '57. It was part of the revival spirit of the "Reformation", and represented a renewal of the earlier consecration movement practiced in Missouri, when all properties were turned over to the Church and then assigned back to individuals as stewardships. The earlier "Law of Consecration" had been abandoned in favor of the law of "Tithing" requiring a tenth of the annual income, but the law of consecration was considered the higher law and this was an attempt to reinitiate the movement in Utah. The disastrous loss of crops and livestock to grasshoppers and severe winter temperatures in 1855-56, no doubt, added emphasis to this perceived need for pooling their resources.[2]

Federal officials viewed the practice with alarm. To them it seemed to be one more example of the effort on the part of Mormon leaders to completely subjugate their members to the will of their leaders as well as an organized effort to keep "Gentiles" out of the territory by gaining control of all of the property in the territory. Commissioner Thomas A. Hendricks of the General Land Office in his annual report

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[1] Deed Records, Book A, MS, pp. 398-416, Box Elder County Recorder's Office.

[2] For a full discussion of the consecration movement see Arrington, Great Basin Kingdom, pp. 145-148.

suggested a congressional investigation into the matter.[1]

Actually, the Church never tried to assume control of any of the properties that were transferred to it as part of the consecration movement in the mid 50's. Perhaps the response was not deemed sufficient to warrant such action, but it is more likely that Church officials were well aware of the adverse reaction the U. S. Government would have toward any such move. It would have been most unwise to take control of these properties in view of the rapidly deteriorating relations with the federal government. Furthermore, it was highly probable that such a move would meet stiff resistance from Utah residents themselves. Thus these legal sounding deed transfers were ignored by the Church, the civil authorities, and the property owners who deeded their property. In fact those individuals participating in the consecration movement may have considered it more of an outward sign of their faith than an actual transfer of property. One entry, Richard Evins, adds a note at the bottom of the transfer stating "I was sent on a mission, April 1857. Much of the above property (was) sold to pay expenses of the mission."[2] Evidently he still considered it his to sell.

Changing Size of Land Holdings

In the original Sherwood Survey of farm lands in 1851, the farms were reported to range from 40 to 80 acres in size and were apparently laid out with a dispersed pattern of isolated farmsteads in mind. At least the people broke up the old fort and moved out onto their farms in 1852. The necessity of building a second fort and once again moving

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[1]Messages and Documents, 1856-57, Part I, serial 893, cited in Neff, History of Utah, p. 540.

[2]Deed Records, Book A, MS, p. 403.

into a village, which was easier to defend seems to have altered the original tendency toward dispersion. It also altered the farm size. When the Fox Survey was made, the bulk of the farms were included in the Big Field Survey, where the most common size farm lot was 4 1/2 acres, although a few larger farms outside the Big Field Survey were identified by the direction and number of miles distance from Brigham City in the 1857 Deed Records. The latter may represent some farms that were surveyed under the original Sherwood Survey of 1851, but most indicate that they were surveyed by Jesse W. Fox. The largest of the distant farms was a 100 acre farm at Willow Creek (Willard) and the smallest was a 10 acre farm west of Brigham City.[1]

One of the major advantages of the Big Field system was the reduction in the cost of fencing and irrigation for each individual. The Big Field was enclosed by a fence to protect crop land from livestock and all land owners had a responsibility to aid in its construction and maintenance. The same applied to irrigation canals, eliminating the need for each individual farmer to fence his own farm and construct his own canal and ditch system. The high population of livestock made fencing an absolute necessity and the General Assembly of the provisional State of Deseret placed the responsibility of protecting crop land directly on the farmer, declaring all unfenced land common pasture.

> Sec. 1. Be it ordained by the General Assembly of the State of Deseret: That all lands except those that are enclosed or being enclosed, are hereby declared common pasturage, and all peacable animals shall be free to run at large and graze thereon, except swine.
>
> Sec. 2. All farming lands used for raising grain, grass, or other agricultural purposes, shall be enclosed with a good and lawful

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[1]Deed Records, Book A., MS, pp. 398-416.

> fence sufficient to secure the crop therein from the encroachments of all kinds of peaceable animals.[1]

The Territorial Legislature in 1855 went one step further:

> Sec. 5. One year shall be allowed to persons having land surveyed, to enclose and fence said land; and on their failing to enclose and fence said land, within one year, their title to said land shall be nullified; and such land is common, and may be surveyed to any person applying for the same.[2]

The above acts were passed before the days of barbed wire fences and there was a scarcity of timber, making the cost of fencing large tracts prohibitive for most individuals. Thus the need to pool resources for fence and canal construction contributed to the Big Field system and to small land holdings elsewhere as well.

Although the average size of land holdings in Brigham City in 1857 was 7.97 acres as determined by the deed records, land units increased in size after that. By 1870 the mean number of improved acres per farm was 37.19, but this figure was distorted somewhat by the existence of a few large farms of several hundred acres and one 1,000 acre farm. Sixty-three percent of the farms were 25 acres or less and 37% were 15 acres or less. In addition 31 of the 111 farms listed in the agricultural census had additional unimproved land averaging 37.19 acres.[3]

Not all of the Box Elder County tax records for the Utah Territorial

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[1] Acts, Resolutions and Memorials, p. 107.

[2] Ibid., p. 272.

[3] Computed from data in the 1870 U. S. Agricultural manuscript census schedules for Brigham City. Box Elder County is missing in the 1860 schedules so a comparison could not be made. The other original schedules are located in the Church Historian's Office in Salt Lake City.

period have been preserved. The earliest record available is for the year 1878. The tax rolls for that year indicate that there were 96 land owners in Brigham City that owned one acre or less, 65 that owned over one acre but not more than five, 113 that owned 6 to 20 acres inclusive, and 41 land owners that owned over 20 acres.[1]

By 1880 the average size farm had increased to 59.54 acres of improved land and 5.94 acres of unimproved land. Forty-three and eight-tenths acres were tilled on the average, and 15.74 acres were in permanent pasture.[2] The 1880 census also shows that 90% of the farms were owner operated and the other 10% were rented for a share of the crop.[3]

Several factors contributed to the initial development of small farms. These included the large amount of labor required to clear the land, dig the canals and smaller ditches, and construct adequate fences; the communal system of including most of the farm land within one large field surveyed into small lots; a nucleated village settlement pattern, which meant that each rural village dweller desired land not too distant from the village; and the accommodation of increasing numbers of settlers with whom the land and water resources were shared. However, as the settlement matured, additional areas were brought under cultivation, and the smaller units proved uneconomical, hence a widespread tendency to increase the size of the land holdings. The communal big fields became incorporated into the expanding towns or broken up into individually fenced farms.

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[1]Compiled from tax assessment rolls of Box Elder County, 1878, Box Elder County Tax Assessor's Office, Brigham City, Utah.

[2]Computed from the 1880 manuscript U. S. agricultural census schedules.

[3]Ibid.

The trend toward larger farms was viewed adversely by Church officials, who were concerned with the assimilation of a constant flow of immigrants to the Valley as well as a rapidly growing native population. Typical of the statements made by Church leaders were the following remarks made by Orson Hyde at the October Conference 1865. He considered 10 acres to be the optimum farm size.

> ...I have known men, single handed attempt to raise twenty-five and thirty acres of grain, when it is more than any one man can well do; the result is, they find themselves troubled to get the water; they run from break of day until dark at night, wearing themselves out, and with all they can do they cannot bestow that attention upon their fields which they need, and they only get from eighteen to twenty bushels of wheat to the acre. When men have confined themselves to ten acres of land, having plowed it well the season before, all the foul weeds killed out and the soil left clean, the seed sown at an early day in the spring, and put in in good order, I have known such fields to produce from forty to sixty bushels of good plump wheat to the acre. Besides, when fields are so cultivated, less water is used; the necessary labor can be performed without being hurried, and a plentiful harvest of golden sheaves reward the toil of the laborer.[1]

Nevertheless, farm size continued to get larger. The average size farm for the Territory of Utah rose from 25 acres in 1850, when the most common farm size was 10-20 acres, to 126 acres in 1890, when the most common size farm was between 20 and 50 acres.[2] The growth in farm size occurred in spite of the natural tendency to divide property among children as an inheritance, and the opposition of Church officials. Apparently economics was the overriding force. Farmers just could not make an acceptable living on the 5 to 10 acre farms that were originally surveyed.

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[1]Journal of Discourses, 26 Vols. The Church of Jesus Christ of Latter-Day Saints (London, England: F.D. and S.W. Richards, 1854-1886), Vol. 12, p. 237.

[2]Computed from the published compendium volumes of the U. S. Agricultural Census for the years mentioned.

Land Titles

Prior to the establishment of the Government Land Office in Salt Lake City in 1869, there were no legal titles to lands in Utah. All land claimed, bought or sold prior to that was based strictly on quit-claim deeds, even though the land had been surveyed and deeds were recorded in the county court houses. This was a matter of grave concern to Utah residents who feared the possibility of losing their land to claim jumpers who might find favor with biased federal officials.[1] They were anxious, therefore, to gain legal title to their land as rapidly as possible, creating a virtual rush at the G.L.O. when it opened for business in 1869.[2]

In Brigham City the first claim filed with the G.L.O. was a homestead entry for 168 acres on April 4, 1869, which was later canceled. It was not until 1870 that patents were granted to residents of Brigham City which turned out to be a bumper year. Six hundred and forty acres of land included on Figure XXII , page 215, were alienated that year--840 acres in cash entries and 800 acres in warrant patents. The land rush continued for the next five years. Figure XXII shows that approximately 6,240 acres of land were transferred from public lands to private ownership from 1870 to 1875, excluding railroad grants. In

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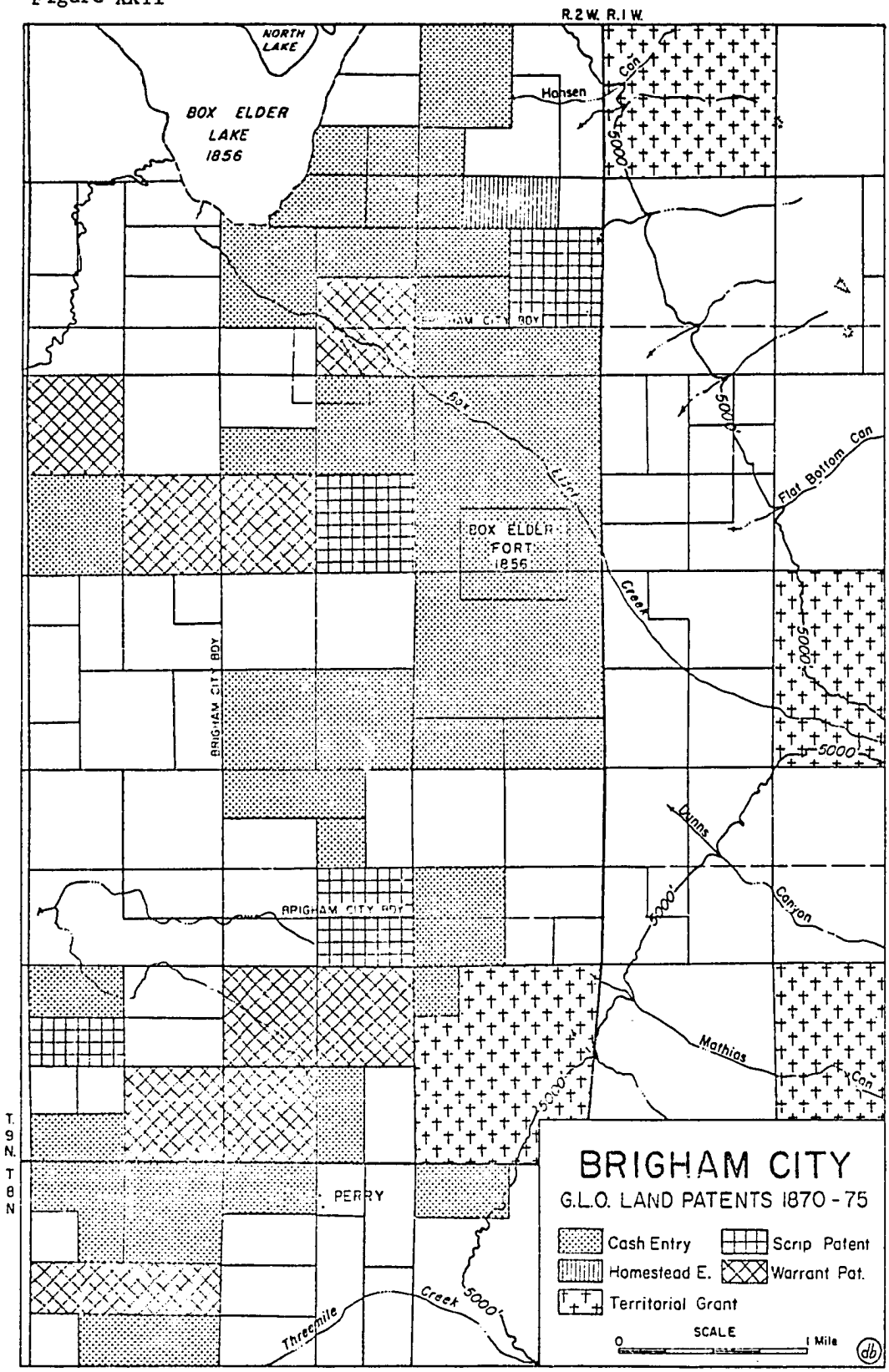
[1]Several editorials appeared in the Deseret News in the early 1870's recounting attempts of claim jumpers to take over property already owned by longtime residents and warning people to make their land claims sure. See Deseret News, Oct. 4, 1873 and May 3, 1876.

[2]In the second half of the fiscal year 1869, 148,403 acres were alienated in the Territory of Utah. In the annual report of the Surveyor-General August 17, 1869, it says: "The zeal evinced by the settlers in acquiring titles to their homes is highly commendable and I would urge the necessity of an appropriation of $50,000 for the extension of the surveys in this district." Cited in Neff, History of Utah, pp. 688-689.

Figure XXII


R.2W. R.1W.
NORTH LAKE
BOX ELDER LAKE 1856
Hansen
Can
5000'
BRIGHAM CITY BDY
5000'
Flat Bottom Can
BOX ELDER FORT 1856
Creek
BRIGHAM CITY BDY
5000'
5000'
Dunns
Canyon
BRIGHAM CITY BDY
5000'
Mathias
Can
5000'
T. 9 N.
T. 8 N.
PERRY
Threemile
Creek
5000'
BRIGHAM CITY
G.L.O. LAND PATENTS 1870 - 75
Cash Entry
Scrip Patent
Homestead E.
Warrant Pat.
Territorial Grant
SCALE
0
1 Mile
db

contrast only 2,100 acres of land were transferred to individuals over the next fifteen years--1876-1890 (see Figure XXIII). Apparently most if not all of the occupied land was alienated during this first five-year period.

It is evident from Figure XXII that the first lands occupied formed a general V pattern as did the terrain. The Bonneville Terrace, closely approximating the 5,000 foot contour line, forms a pronounced bench several hundred feet above the alluvial piedmont stretching westward at the base of the mountains. This in turn drops rather rapidly down to the flat lake plains,gradually giving way to salt marshes and mud flats. It was the lower sloping lands of the piedmont which were occupied first. They were low enough that water could be brought to them by canal but had enough slope to assure good drainage. The flat lake plains to the west, although not totally avoided did not attract as much interest. Here the problems of poor drainage, alkaline soils, and sloughs discouraged early settlement. At the same time the higher alluvial slopes to the east of Brigham City were also avoided. The major irrigation canals were diverted from Box Elder Creek just east of the Brigham City boundary corresponding with the Range line 1 W. Thus part of Brigham City itself was above the canal and remained unirrigated until after the turn of the century.[1] Consequently land to the east of Brigham City was unclaimed in 1875. In fact only 200 acres had passed into private hands by 1890--one 40 acre tract which was a cash entry in 1889 and two 80 acre homesteads in 1890.[2]

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[1]William Griffin, private interview, longtime resident of Brigham City and Box Elder County Surveyor for more than 20 years.

[2]U. S. Bureau of Land Management, "Index to Township Plats, Township 9 North, Range 2 West, S. L. Meridian.

Figure XXIII also shows other facts of significance. One might theorize that since these lands were already occupied, and the federal government recognized the pre-emption right of the occupants to get first claim to the land, that most of the land would have been filed as homesteads since that would be the cheapest way to obtain title to the land. Such was definitely not the case in Brigham City. Only one 80 acre tract was patented as a homestead whereas 4,160 acres were patented as cash entries. Of course warrant and scrip patents were utilized to the maximum extent possible--1,440 acres in warrant patents and 560 acres in scrip patents, but by far the bulk of the land was obtained with cash purchases of $1.25 an acre.

There are several factors which contributed to the high number of cash entries vs. homesteads. This land was already occupied and the owners were anxious to gain clear title to the land immediately rather than wait five years to "prove up" on it. Furthermore most of the farmers lived in the village while their farms which were usually small may have been some distance away. In order to "prove up" on their homestead, they would have to make improvements on the farm and live on it for five years. This did not appeal to village dwellers particularly if the farm was only 5-20 acres in size. It probably did not seem worth using up their right of homestead and the cost of constructing an additional home on the farm. Besides, small farms did not require large amounts of capital. A twenty acre farm could be purchased for $25.00 whereas a 160 acre farm cost $200.00. As a result of all of these factors and perhaps others, the first rush for land titles was for cash purchases.

It is evident, however, from Figure XXIII that in spite of the fact that farms were small, many of the cash entries were for 160 acre units

and most of the others were for 80 acre units. There were none smaller than forty acres. Yet as already indicated, the Box Elder County tax records for 1878, list 65 land owners with properties larger than one acre but not over five, while at the other end of the scale only 40 individuals owned more than 20 acres.[1] In 1880 the average size farm, according to the agricultural census, was 59.54 improved acres. Of the 127 farms listed 21 were 80 acres or larger, 82 were 25-79 acres and 24 were less than 25 acres. Clearly the patents granted by the G.L.O. were much larger than the units operated by individuals.

The above discrepancy is explained by the trustee system of obtaining land titles, which has been described by a number of previous authors in connection with homesteads. One person was selected to file for a 160 acre homestead to which he eventually gained legal title and then in turn gave quit-claim deeds to the several land owners who had property within that quarter section.[2] If Brigham City is a typical example this practice seems to have developed first with cash entries rather than homesteads, since most of the occupied land was obtained by purchase.

In Brigham City, William Davis obtained title to the NE 1/4 of Section 14, T9N, R2W, S.L.M. from the United States for the sum of $200.00 cash on June 20, 1870. He in turn sold 55.71 acres to Lewis Wright for the sum of $83.50 on Jan. 9, 1871. He also sold one 4 1/2 acre lot and one 1 acre lot to William L. Watkins for $7.00; six acres

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[1]Computed from list of property owners on the tax assessor's rolls for 1878, Box Elder County Assessor's Office, Brigham City, Utah.

[2]See Nelson, The Mormon Village, p. 140; Monson, "The Economic Plan of Mormon Colonization," pp. 49-42; Hunter, Brigham Young the Colonizer, p. 148.

to George Reader for $9.00; one 4 1/2 acre lot to Heber Madsen for $7.00; and one 4 1/2 acre lot to William Wrightlow for $7.50 within the next two year period.[1] He purchased the land for $1.25 and sold it generally for $1.50 an acre. Apparently the $0.25 an acre profit was to compensate him for his troubles. Quite clearly he was not speculating in rising land values.

Of course the preferred method of obtaining land titles was by warrant or script patent. This allowed the beneficiary to obtain immediate title to the land but did not require the expenditure of $1.25 per acre. A number of Utah residents were eligible for military warrants by virtue of their service in the Mexican War, or other military campaigns on the western frontier. Brigham Young recognized the potential value of these warrants very early and counseled Utah residents as early as 1850 to hang on to them.

> Dear Brethren: --Ever solicitous for your welfare, as well as to promote the cause of Zion, we feel to counsel you in regard to your 'land warrants.' It is wisdom for all who are entitled to them to make applications therefore at such times and in such manner as will incur the least expense...Obtain your land warrants and then keep them, until the lands in the valleys of Utah are surveyed and brought into market, then you can secure your firesides and other improvements to yourselves and friends. Hundreds who were in the Battalion have sorely regretted the manner in which they suffered themselves to be fooled out of their warrants, back pay, mileage, &c.
> Brethren, be wiser now... Those warrants are as good as money, dollar for dollar, in the Land Offices; therefore do not let land jobbers, speculators, &c., whose only study is to subserve individual interest and get rich by oppressing and swindling the community, re-enact with you the ever memorable transactions pertaining to the disposal of the land warrants of the Mormon Battalion...
>
> Brigham Young
> Heber C. Kimball
> J. M. Grant[2]

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[1]These land transactions were gleaned from Abstract Sections, Book a, p. 97, and the Deed Records Books A and B., Box Elder County Recorder's Office.

[2]Clark, Messages, Vol. 2, pp. 187-188.

When the land office was established in 1869, many individuals were able to use these warrants to gain title to a quarter section of land.

The urban dwellers obtained title to their city lots under a similar system. On March 2, 1867, the Congress of the United States passed "An Act For the Relief of the Inhabitants of Cities and Towns Upon the Public Lands," which allowed the corporate authorities--if not incorporated then the judge of the county court--to enter the settled or occupied land for the minimum price ($1.25 an acre) in trust for the settlers thereof. The State or Territory was to regulate the disposal of this property to occupants. If the number of inhabitants was 100-200, the maximum amount of land to be included was 320 acres; if the population was 200-1,000, the maximum was extended to 640 acres, and to 1,280 acres for towns that exceeded 1,000 population to a maximum of 5,000.[1]

In accordance with the above act 1,280 acres of land, including the southern portion of Section 12, all of Section 13, and 480 acres of Section 24, were granted to Chester Loveland Mayor of Brigham City as trustee for the inhabitants thereof on May 1, 1872.[2] He in turn deeded the individual city lots to the various owners for $1.25 an acre and a small recording fee. Figure XXVI shows the area included in this large cash entry.

After 1875 there were significant changes in both the rate of land alienation and the type of entries made. As mentioned earlier, titles to only 2,100 acres were granted over the next fifteen years. Of these

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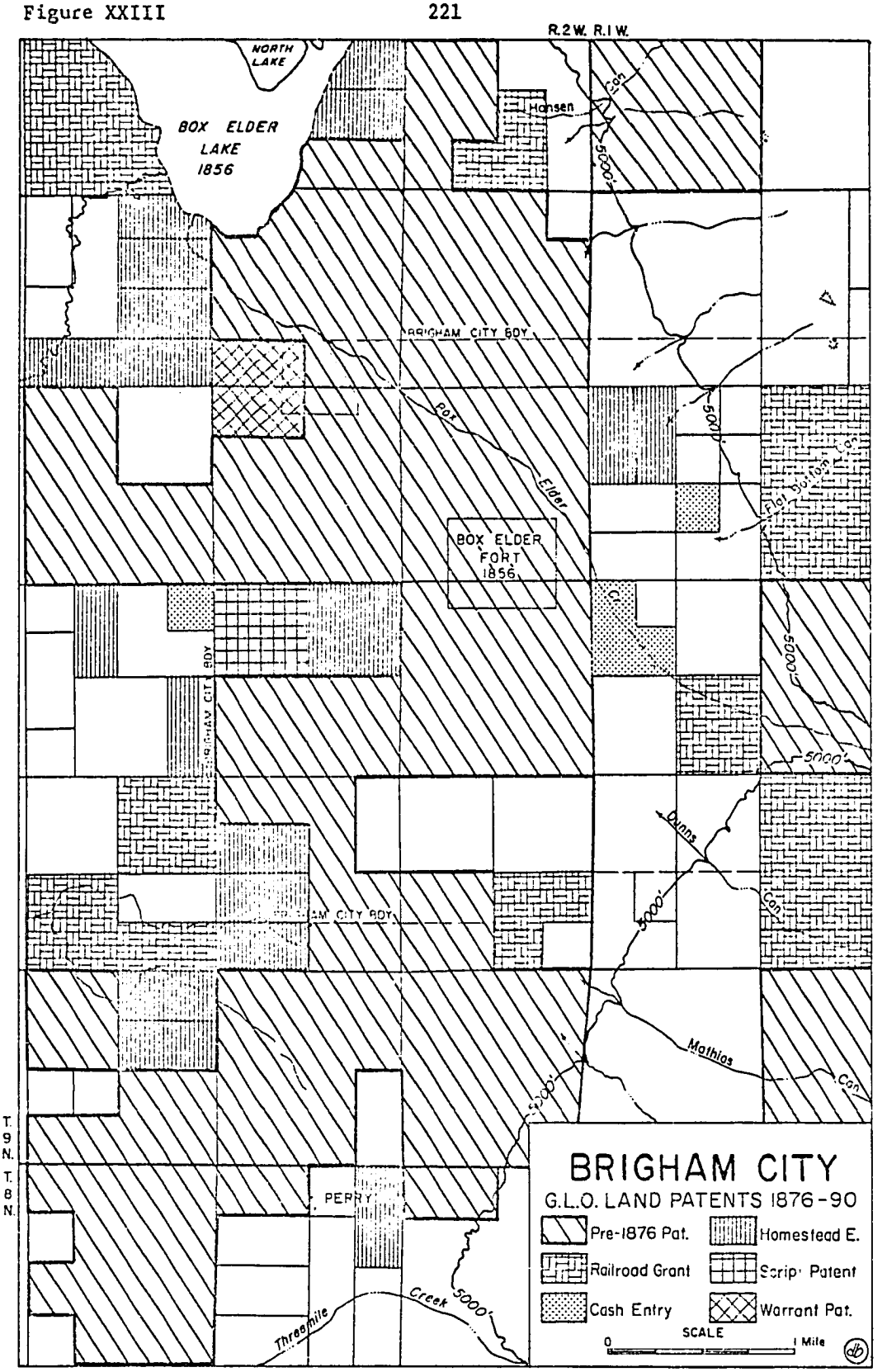
[1]Revised Ordinances and Resolutions of the City Council of Salt Lake City in the Territory of Utah; printed by order of the City Council (Salt Lake City: Deseret News Press, 1875), pp. i-ii.

[2]Government Land Office Deed, May 1, 1872. Microfilm copy on file at Bureau of Land Management, Salt Lake City, Utah.

Figure XXIII



1,580 acres were granted as homesteads; 200 acres were sold for cash, and 160 acres each were granted as warrant and script patents (see Fig. XXVI). Seventy-five percent of the entries in the 1876-90 period were homesteads compared with only one 80 acre homestead (1.92%) in the 1870-75 period. In contrast only 200 acres (9.52%) were paid for in cash during the later 15 year period compared to 2,080 acres (50%) during the first five years--1870-75. Apparently there were few individuals qualified for warrant or script patents remaining after 1875.

Clearly the better lands were occupied first and these were paid for in cash or obtained by warrant or script patents, while the poorer lands--the higher slopes or the low alkaline and/or swampy land--were left until later and became homestead land. Since it took five years to acquire title under a homestead entry, one would not expect to find any homestead patents before 1875, but if land had been filed under homesteads at the same time and same rate as cash entries there should have been a rash of them in 1875 and 1876. Such was not the case. Most of the homestead patents were granted in the late 1870's and early 80's, which meant that the homesteads were filed after most of the occupied land was already purchased.

Figure XXIII also gives some indication of success and failure. Those homesteads that were granted during the late 70's and early 80's represented successful farmers, for the most part, who had remained on their land long enough to "prove up" on their farms, while the blank places on the western portion of the map, by-and-large, represent homesteads that failed. Nearly all of these latter tracts were entered as homesteads during the 70's or 80's but were later canceled or relinquished. The same is true of much of the land immediately east of

Brigham City, which was dependent on later high level canals before it proved to be of value.

Persistence

The question of persistence also comes to mind. What was the rate of turnover in this early farming community as opposed to the number who stayed. The agricultural census provides one index for measuring persistence among the farmers of the community, since it lists the name of each farmer. By checking the number of names which recur in the succeeding census, it is possible to gain a rough idea of how many farmers remained for a ten year period. A similar check for the recurrence of surnames may serve as a rough index of the number of sons, brothers, or other family members still farming in the area. Such an index is an imperfect measure, of course, because not all persons with the same surname would necessarily be related. Furthermore married daughters would have different surnames and would be missed in such a tabulation. Still, farms were more apt to be passed from father to son than from father to daughter. Thus the recurrence of the same surname in the later census should give some idea at least of the continuance of farm land in the same family.

Unfortunately, Box Elder County did not exist in 1850, making it impossible to distinguish farmers living in Brigham City from farmers living elsewhere in Weber County. Furthermore Brigham City was only settled in 1850 and would have had very few inhabitants at the time the census was taken. To complicate matters still further, the Box Elder County schedules are missing from the 1860 agricultural schedules for Utah Territory. Consequently it is not possible to measure the persistence of farmers, per se, for the first decade in Brigham City.

However, the Bishop's Report in 1852 and 1853 does list the heads of families living at Box Elder, and the manuscript population schedules for Box Elder County in 1860 are available. Consequently the names on the 1852-53 Bishop's Reports were checked against the manuscript population schedules for 1860, giving some measure of persistence for the entire population, rather than just farmers. The 1870 agricultural schedules were checked against the 1880 agricultural schedules to measure the persistence of farmers (see Table XXV). The 1890 schedules, of course, are not available for any state or territory since they were destroyed by fire in Washington, D. C.

Perhaps the most surprising fact emerging from the above results is the consistency between the two decades--the 50's and the 70's. There is less than four percentage points variation in any of the measurements, in spite of the fact that one is a measure of the general populace and the other a measure of farmers and at opposite ends of a thirty year period. In both cases the number recurring is surprisingly low. Less than 20% of the names recurred on the next census, which means that over 80% of the heads of families in 1853 either died, moved away or were missed by the census taker in 1860 and over 80% of the farmers in 1870 were no longer farming in 1880. Such a high rate of turnover was unexpected. No doubt some individuals were missed by census takers and some died, but that would likely account for a very small percent. An astounding degree of social and spatial mobility existed at Brigham City.

It is difficult to account for such a high degree of mobility. The turnover during the 50's was probably intensified by the move southward in 1858, when the northern settlements were evacuated because of the Utah War. Perhaps a much smaller percentage of settlers returned than is usually thought, yet the greater number of recurring surnames

Table XXVI

NAMES OF BRIGHAM CITY INHABITANTS RECURRING IN LATER CENSUS

	General Pop. 1853-1860	Agricultural Pop. 1870-1880
Number of same names recurring	4	21
Percentage of same names recurring	15.38	18.92
Number of same surnames recurring	7	30
Percentage of same surnames recurring	26.92	27.03
Total same names and same surnames	11	51
Total percentage of same names and same surnames	42.31	45.95

Tabulated from 1853 Bishop's Report, U. S. census, 1860, manuscript population schedules and the 1870 and 1880 U. S. manuscript agricultural census schedules.

indicates that approximately 40% of the families were still represented in 1860. How much of the turnover was due to the move south in 1858 and how much was due to a general high degree of mobility throughout the settlements is unknown.

The rate of turnover among farmers during the decade of the 70's was no doubt influenced by the increased size of land holdings. Farms were getting larger,which meant fewer farmers if there were no compensatory expansion in agricultural land. Some farmers in 1870 had no doubt turned their farms over to sons by 1880 and hence did not appear on the later agricultural census even though they may still have lived in Brigham City. Again approximately 40% of the families were still represented on the later census.

The major explanation for the lack of persistence probably lies in the general economic and social conditions prevalent in the Mormon Core area during this colonization period. Both push and pull forces combined to encourage mobility. Along the Wasatch Front, overpopulation was a serious problem by 1880. Virtually all available water was claimed and the better lands were already occupied, frequently in such small units that under-employment was serious. In Brigham City, 75% of the land acquired over the twenty year period, 1870-1890, was acquired during the first five years. The land that was left was clearly the less desirable land as indicated by the frequency of canceled or relinquished homestead entries in those areas. In the words of one observor: "I find the settlements crowded up to their utmost capacity, land and water all appropriated, and our young people as they marry off have no place to settle near home . . . the resources of the people

are about exhausted unless they go into manufacturing."[1]

While such conditions along the front tended to discourage farmers and squeeze the less successful out, new colonies were being established at many localities throughout the intermountain region, which were anxious to attract additional settlers. Letters from these new colonies often encouraged friends and relatives in the Salt Lake Valley to join them in their new venture. One new settler at Salem, Idaho wrote to his father, editor of a small newspaper in Pleasant Grove:

> Editor Enquirer: Allow me to occupy a small space in your columns in the interest of the Latter-Day saints who may desire to find new locations in which to improve their conditions. . .
>
> We have from 3 to 500,000 acres of good tillable soil with beautiful mountain streams, sufficient to supply more than that amount of land.
>
> . . . Pres. John Taylor made a visit to us a few months since; when he expressed his surprise at finding such a good country here. Said he, "There is land enough here to sustain a million souls," at present we number about 2,000 . . .
>
> . . .A word to the young men; when you get married, don't content yourselves with living in someone else's back kitchen nor build your house in a city where you have no farm adjoining. If you would be a free and honest farmer, there are new countries being settled all around you by the Latter-Day Saints under the direction of the Presidency of the Church. Take an "out" and see for yourselves; you will be well paid for your trip.[2]

The survey of journals in Chapter III demonstrated that 65% or more of the settlers moving from the Core to the frontier did so because of personal reasons. Implicit in a majority of cases was a belief by the diarist, that he could improve his economic status by the move. Both push and pull forces apparently led many farmers to sell out and move to a new settlement.

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[1]F. A. Hammond, Deseret News, April 19, 1855, cited in Arrington, Great Basin Kingdom, p. 354.

[2]Letter, George H. B. Harris to his father George H. Harris George H. Harris (unpublished journal, typescript), Vol, 4, p. 248.

Yet slightly over 25% of the same surnames reappeared on the later censuses. This would indicate that even though many settlers were moving away from Brigham City a substantial number of family members (fathers, sons, brothers, or cousins) remained. If one includes the same names along with the same surnames, over 40% of the surnames recur on the succeeding censuses. Apparently there was more persistence by families than by individuals. It may be that it was often the first settlers who moved on to new areas, leaving their farms and homes in the hands of their children. Second generation settlers may not have been as willing to put up with frontier conditions as their parents. Such has often been the case on other frontiers.

The Brigham City Cooperative

One of the most distinguishing features of Brigham City during the 19th Century was the development of the Brigham City Mercantile and Manufacturing Association. This association serves as an excellent index to gauge the degree of Church direction and influence in the economic affairs of this northern settlement. Because the Brigham City Cooperative was probably the first and the best developed of all the Mormon Cooperatives, it became the prototype for initiating hundreds of similar institutions in the other Mormon settlements throughout the west. The co-op has been the object of much research by Utah historians.[1] Consequently

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[1]See Leonard J. Arrington, "Cooperative Community in the North, Brigham City Utah" Utah Historical Quarterly, Summer, 1965, Vol. 33, No. 3, pp. 198-217; "United Order of Northern Utah," Heartthrobs of the West, Vol. 1, (1936), pp. 53-56; Daughters of the Utah Pioneers of Box Elder County comp. History of Box Elder County (Brigham City, [1937]); Denton Hatch, "Brigham City United Order," (unpublished paper, Dec. 5, 1970), copy on file in L.D.S. Church Archives; Arden B. Olsen, "The History of Mormon Mercantile Cooperation in Utah" (unpublished PhD. dissertation, University of California, Berkeley, 1935); Charles N. Chestnutwood, "An Historical Approach to the Urban Geography of Brigham City," (unpublished Master's thesis, University of Utah, 1950).

there is no need here to examine the development and procedures of the cooperative but merely to sketch the outline of its development, functions, and demise.

Perhaps no other city along the Wasatch Front, or for that matter throughout Mormondom, experienced a greater degree of direction and influence by Church authorities than did Brigham City. The population of the entire county never exceeded 8,000 during the entire 40 year period covered by this study, yet this relatively small settlement was under the direction and control of one of the very prominent apostles--Lorenzo Snow. He was both the spiritual and temporal leader of the community. Snow seemed to have had a keen business sense and was able to command the trust, devotion and cooperation of the entire community, persuading the first settlers to share their water rights and land with newcomers upon his first visit. As early as 1864 he supervised the organization of a general cooperative store which was simply a joint stock enterprise in which Snow and three merchants of the city invested $3,000 each. Two years later William C. Thomas sold his interest in the firm,leaving only three.[1] The success of the enterprise soon attracted additional investors and the operations were expanded. By 1870 it was the only store in town. The company initiated a policy of giving no dividends in cash or imported merchandise which made it possible to accumulate sufficient savings to invest in expanded industries.[2] Gradually the list of stockholders grew and the cooperative branched out into various home industries, which allowed them to pay dividends in articles produced. The Cooperative

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[1]Hatch, "United Order", p. 2.

[2]Arrington, "Cooperative Community", p. 201.

expanded to include a tannery, boot and shoe shop, saddle and harness shop, woolen factory, community sheep herd, dairy, cheese factory, meat market, hat, tinware, pottery, broom, brush and molasses factories, shingle mill, and cotton farm.[1]

In June of 1874 the Brigham City Mercantile and Manufacturing Company was reorganized under the name of the Brigham City United Order, which made it an official Church organization, but in actuality it changed very little. The board of directors became the "United Order Council" consisting of 60 influential citizens of the county. Under the United Order the cooperative venture was expanded until it included virtually the entire community. While the rest of the nation was experiencing an economic depression in the early 70's, Brigham City was experiencing unprecedented economic growth.

The economic health of the cooperative did not continue indefinitely, however. A series of natural disasters in 1877-78, combined with harassment by federal officials over the next ten year period, led to its eventual failure. Snow and many of the other prominent leaders were prosecuted under anti-polygamy laws and served prison terms or went into permanent hiding, leaving the cooperative leaderless. The final blow came with the depression of the 1890's, when the cooperative store went bankrupt. The local court appointed a receiver for the corporation on November 30, 1895, ending this 31 year experiment in cooperative enterprises.[2]

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[1]Eliza R. Snow, Biography and Family Record of Lorenzo Snow, Salt Lake City: Deseret News Press, 1884, pp. 291-296.

[2]Arrington, "Cooperative Community", pp. 208-217.

PART II

KAYSVILLE

Initial Settlement

Kaysville, like Brigham City, was first settled by individuals, acting on their own prerogative, who sought out what appeared to be suitable areas for settlement. The first settler in the region was Hector C. Haight, who, following the example of Perrigrine Sessions, the founder of Bountiful, brought a herd of cattle northward to find winter pasture for them in 1847. He spent the winter of 1847-48 in the Farmington area, then moved his cattle on to new range along the lake shore to the northwest, constructing a herd cabin on what is now Haight Creek about two miles southwest of present Kaysville. The example set by Sessions and Haight was soon followed by others. By 1849 it was a general policy. D. A. Miller states in his diary: "At the October Conference liberty was given for those who wished to locate on different streams and springs where good feed could be found for their stock for there was little feed for the cattle."[1] In 1848 and 1849 a number of settlers moved north, but most of them stopped in Bountiful, Centerville or Farmington before reaching the Kaysville area, or they went further north to Ogden.

Samuel Oliver Holmes, the second settler in Kaysville, came to the next major creek north of Haight, now called Holmes Creek, probably in 1849, and established a farm.[2] In the winter of 1849-50 Edward Phillips and John Green went northward to settle in the Ogden vicinity, but found

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[1]Melba Thornley, "History of Kaysville," MS, Joel Ricks Collection, Utah State Historical Society, Salt Lake City, Utah, p. 5.

[2]Henry H. Blood, "Early Settlement of Kaysville, Utah, "Utah Historical Quarterly, Vol. 2 (Jan. 1929, p. 15.

Courtesy of Davis County Recorder's Office

the snow drifts too deep on the Sand Ridge (the Weber Delta of Lake Bonneville) and turned back. They stopped at Sandy Creek (now Kay's Creek), where they found the soil suitable and well covered with bunch grass. After spending the remainder of the winter in the Big Field south of Salt Lake City, they returned with their families along with William Kay to establish permanent homes in the spring of 1850.[1]

The Stansbury Map of 1850 shows a large section of surveyed land in the Bountiful and Farmington area and in Ogden while only three settlers appear in the Kaysville area--Haight, Holmes and Phillips (see Figure XXV). Additional settlers arrived in 1850, taking up land on the low lake plains south and west of present Kaysville in the neighborhood of these first three settlers.

The Kaysville district extends from the mountains on the east to the lake at the west and includes eight distinct terraces left by the shrinking Lake Bonneville. The first settlers chose their land on the low flat lake plain bordering the Great Salt Lake, apparently because they were looking primarily for grazing, and the salt grass growing on the lower lake plains provided year round feed. Also, it was very level land which meant that it was comparatively easy to irrigate. On the higher terraces the streams were confined in deeper channels, making it difficult to bring the water out onto the land, whereas on the lowest lake plain it was comparatively easy to divert part of the water into irrigation ditches.

As additional settlers arrived, however, the core of the settlement migrated upstream to the east to higher and higher terraces. This caused

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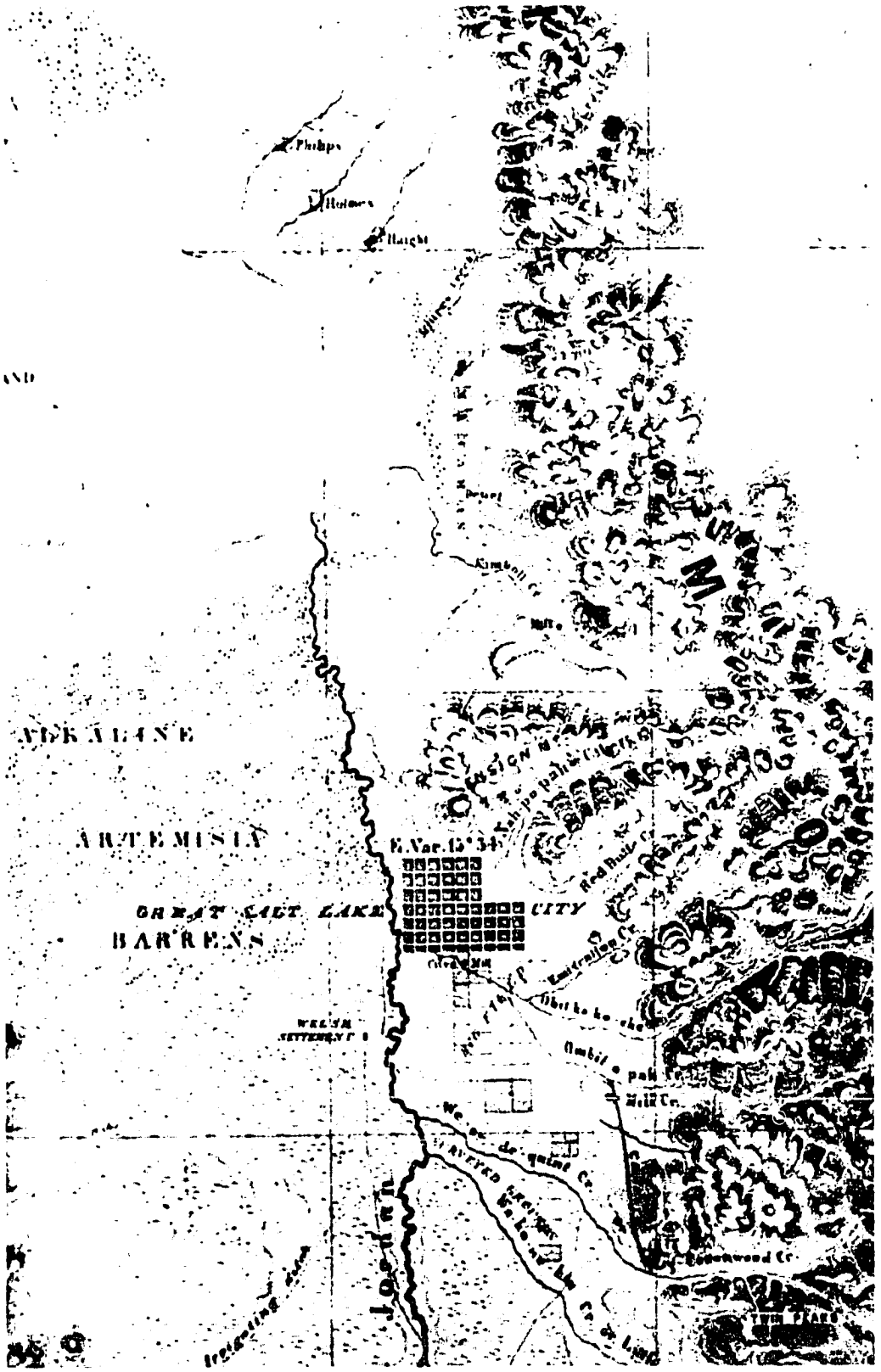
[1]Thornley, "History of Kaysville", p. 1.



Enlarged Section of Stansbury's Map, 1849-50

the first settlers considerable concern for fear the use of water further upstream would not leave a sufficient amount to irrigate their small holdings on the lower lands. They had already discovered that the streams draining from the Wasatch Mountains became intermittent during the dry summer months and during the drier years sank into the alluvium within a few miles of the mountains themselves. Henry Blood stated that during the early days of Kaysville the stream coming through town became so small that for three months at a time no water crossed Main Street.[1] The loss of water in the streams as they drained across the piedmont was no doubt a major factor in the migration of the center of the settlement eastward.

Ecclesiastical Organization

The development of an ecclesiastical organization gave a sense of identity and cohesion to a new community. By 1851 there were about twenty families in the Kaysville region, and Church officials deemed it sufficient to organize an ecclesiastical ward. Brigham Young, H. C. Kimball and others stopped at the home of Edward Phillips on Monday, January 27, 1851 and appointed William Kay the Bishop of a newly organized ward thereafter called Kay's Ward. The ecclesiastical system provided the organizational infrastructure for the development of civil and social functions as well as religious ones. One of the first items of concern was the development of schools,which often included adult education as well as classes for children. The first school in Kaysville was built before the church.[2]

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[1]Henry Blood, "Early Settlement of Kaysville, Utah", p. 16.

[2]Letter, William Booth to the Deseret News, quoted in Journal History, January 17, 1852, p. 1

Dispersed Nature of the Settlement

Kaysville was not settled as a village nor did it ever truly become a classical Mormon village with the bulk of the farmers living within the village, although it did later develop an urban nucleus. The first settlers arrived gradually over a several year period coming on their own rather than as part of any Church organized colonization. They took up land wherever it was available and wherever it suited them. In November 1854 Ezra Taft Benson reported that he: "Went to Kay's Creek where he held a crowded meeting in the school house. Here he found the people living in a scattered condition building in Gentile fashion."[1]

William Blood stated that when he arrived in the settlement in 1850 there were only about twenty families in the ward which were scattered over a five mile square. According to Joseph Barton who arrived at the settlement in 1862, "there was no division of the land. A settler came in, saw a tract of land that suited him, and if not already occupied, took it up by fencing it and living on it and that is why the boundaries of the land within the old original Kay's Ward or Kaysville are so irregular and do not conform to United States Surveys."[2]

Like Brigham City, it was the Indian wars in 1853 and 1854 that led to development of an urban nucleus. In 1854 Jesse W. Fox, the surveyor-general, came from Salt Lake to lay out a town plat which would be enclosed within a fort wall.

> The wall was constructed from clay dug from the outside, the excavation forming a moat around the outside. It was put in lumber forms, similar to the present method of concrete construction. At the base the wall was about five feet wide and it

---

[1]Journal History, Nov. 22, 1854.

[2]Statement of Joseph Barton, quoted by Thornley, "History of Kaysville, Utah," p. 8.

> tapered up to about three feet at the top, the height being about six feet.
>
> The wall was about 108 rods square and constituted three tiers of blocks north-south and east-west. A little later it was extended two additional blocks to the west. Actually the wall was never completely finished and was never needed for protection against the Indians, but it did mark the beginning for the town of Kaysville.[1]

Unlike Brigham City, where virtually the entire population moved within the fort, transforming the earlier dispersed pattern to a village pattern, in Kaysville the early farmers declined to leave their farms and come into the fort as planned. Later arrivals who settled within the confines of the fort, especially those who did not devote their whole time to farming--merchants, shoemakers, etc., comprised the first true village settlers.

Brigham City, which was the northern outpost at this early period, probably felt much more keenly the need for defense against possible Indian attack than did Kaysville, located near the center of the zone of Mormon settlement--hence, the greater reluctance on the part of the farmers in Kaysville to leave their farms and move into the fort. Consequently, what emerged was a small urban nucleus surrounded by dispersed farmsteads which were tied economically and culturally to the town center.

Joseph Barton who served for many years as a county surveyor drew a map of Kaysville as it was in 1862 when he arrived. The map was drawn from memory several years after his arrival, but is a remarkable document showing the location of the occupied farmsteads and the owners of town lots. The map identifies 18 land holders within the city plat compared to 80 dispersed farmers in the surrounding district. The fort wall enclosed the city plat. The government land survey of 1855 also identifies

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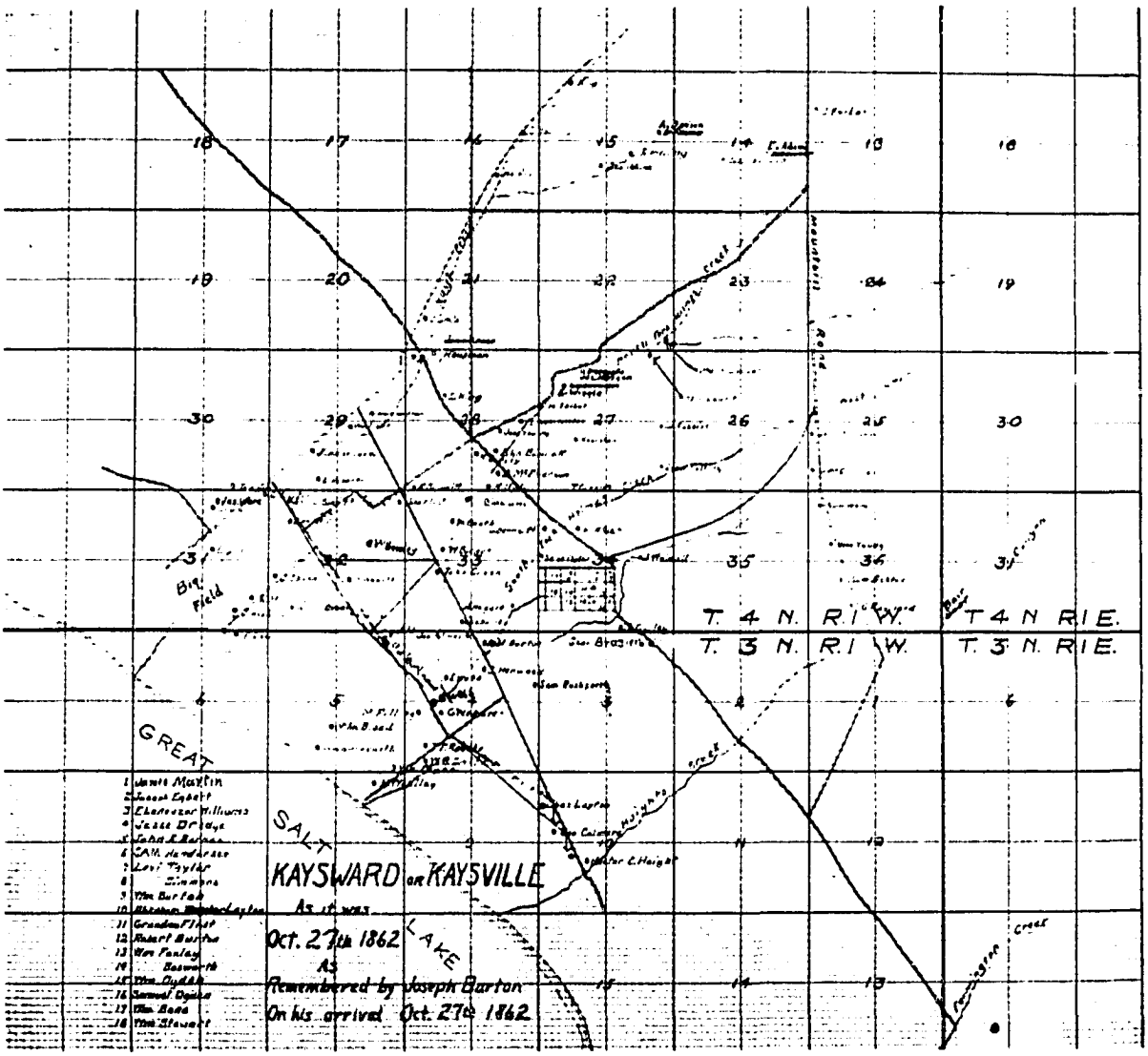
[1]Ivy Blood Hill, editor William Blood Biography, (Logan, Utah: J. P. Smith and Son, 1962), p. 17.

Figure XXVI

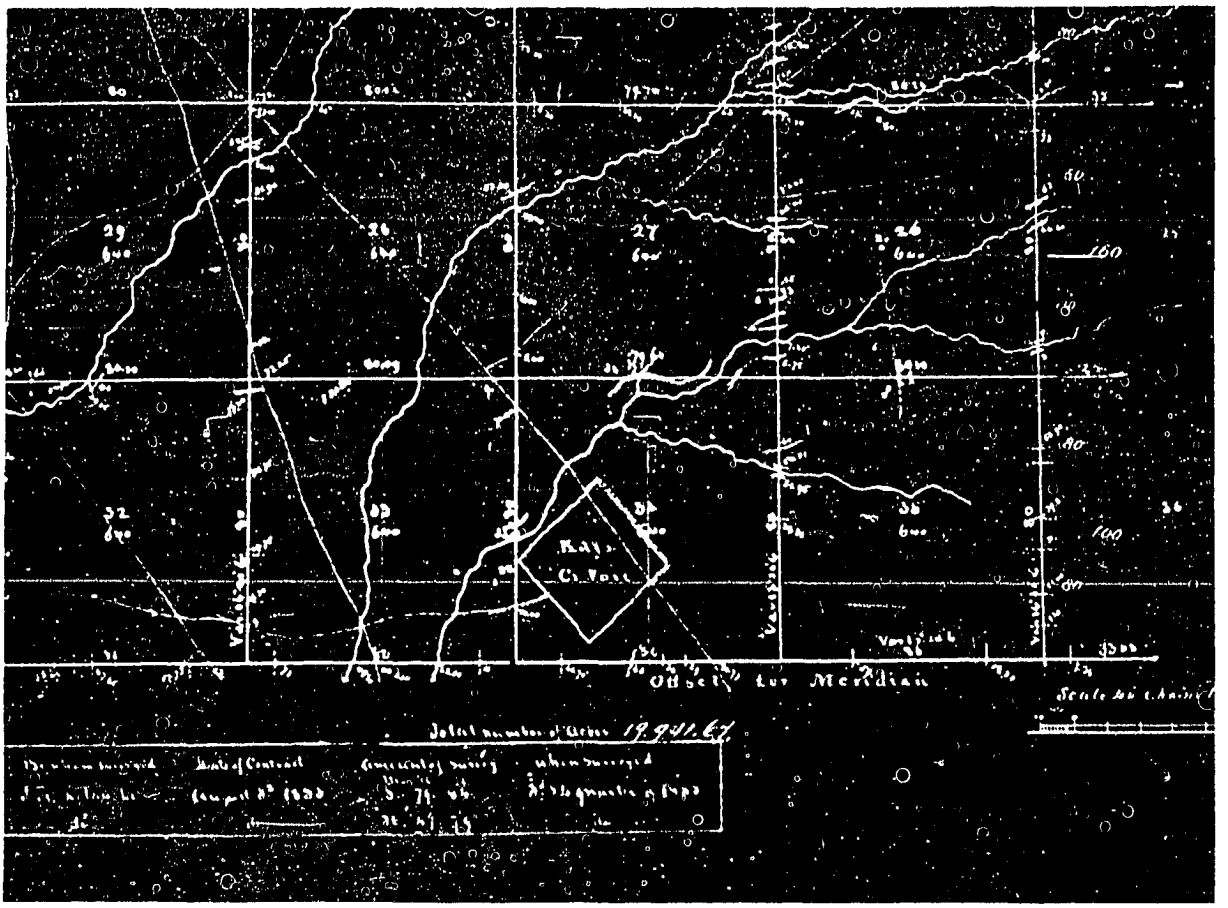
Kaysville - 1862



Reproduction of map drawn by Joseph Barton (Davis County Surveyor) - drawn approximately 1872. Courtesy of Alpheus Harvey, early Kaysville resident.

Figure XXVII

Government Survey Plat of Kaysville Region in 1855



Courtesy of Davis County Recorder's Office

the location of Kay's Creek Fort in Section 34, T 4N and R 1W (see Fig. XXVII, but shows the orientation of the fort incorrectly. The survey plat shows the fort lies in an angular position with northeast-southwest and northwest-southeast walls. Yet Barton's map and all other plat maps of Kaysville which the author was able to find show Plat A, the original portion of the town, with streets running in cardinal directions as they do today. Local histories identify the fort walls as running along specific streets as they exist today, and old time residents are able to point out where the walls used to be. Apparently the government surveyors in 1855 drew their plat map without checking in the field.

Agricultural Development

As population grew the form of agriculture itself also underwent a transition. The first settlers were primarily herders and secondarily farmers, but as more and more land was taken up, farming became increasingly important. The center of population shifted to the east to higher and higher ground and considerable experimentation took place in the types of crops that could be grown. Perhaps one of the most interesting experiments in Kaysville was the attempt to grow cotton. Reddon Allred, writing to the Deseret News November 6, 1852, reports:

> Last season I came to the valley and brought with me two or three dozen cotton seeds, which I planted on the 15th of May, and to my satisfaction, it grew and matured before the frost interfered. It must be remembered that all the farms in the valley will not mature this crop from the fact that the frost makes its appearance very early in the low lands. My farm is situated on the bench near the mountain where the frost did not make its appearance up to the 6th of October, to injure the most tender plant.
>
> There is benchland enough to have one thousand acres of cotton growing every year; and if the seasons are like the present or previous ones it will come to perfection. From the first to the 15th of May is the time to plant the seed. Seed is the only difficulty, and even that can be remedied by sending to John Brown and have a few bushel of seeds forwarded next season.

> Alan Taylor would plant five acres if he had the seed. I will have a pint or more of the seed which will be planted next season. I would be glad when I return from my mission to see the highlands covered with cotton resembling the snow mountains for whiteness.
>
> There are men that understand raising cotton that will take hold of the business as soon as they are assured it will grow. I believe from what I have seen that it can be a profitable crop.[1]

Cotton, of course, never became an important crop in Kaysville and the foothills were never white with cotton, yet this initial attempt at cotton culture indicates the extent of agricultural experimentation that was taking place even at this early date. As early as 1852, settlers had recognized the phenomenon of cold air drainage. They noted that late frosts in the spring and early frosts in the fall occurred more often in the lowlands out by the lake than they did on the higher terraces near the foothills--a fact that is responsible for the location of orchards on the benchlands today. Cold air drainage and the greater prevalence of mosquitoes near the lake may have contributed to the eastward migration of the population center as well as the shortage of water.

Grazing, however, remained a dominant agricultural activity throughout the decade of the 50's as each immigrant train arriving in the valley added to the already burgeoning cattle population. Throughout the northern settlements, large herds of cattle grazed on extensive ranges of bunch grass surrounding the farmed land. The severe winter of 1855-56 resulted in the loss of many thousand head of these cattle. The vicissitudes of drought, winter kill of stock, and grasshopper plagues are described graphically by William Blood, an early resident of Kay's Ward.

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[1]Letter, Reddon Allred to Deseret News, Nov. 6, 1852, dated October 16, 1852.

> In 1855 it was extremely dry because very little snow fell during the winter in our mountains. There was no water to irrigate our farms and the land dried out. There was no use for any more people to settle here, as they could not have water for crops. . .
>
> The big range from Kaysville to Ogden was covered with mountain bunch grass, the very best of feed but shorter than usual because of drouth. The people had a great many cattle and a great many oxen that had pulled the heavy wagons across the plains that summer. These were owned by the people of Salt Lake, Kaysville, and Ogden. The animals were turned on the range as usual and we expected a mild winter like those we had known here. But 1855-56 was very severe. We had no hay and only a little straw; lucerne (alfalfa) was not known in Utah at that time.
>
> About ten days before Christmas snow fell almost four feet deep, then it rained and settled the snow to about two feet, then it turned severely cold and froze the snow to ice. All the grass was under the frozen snow, so the cattle could get no feed. On Christmas day a north wind blew all day. The cattle traveled before the wind and came from the range to the homes and farms by the thousands and their bellowings and cries were dreadful. They were freezing and starving.
>
> I was so affected I cried for the poor cattle, but we could do nothing for them. . .
>
> The people had no feed for their cows except straw and chaff. They dried up and got very poor. We had to help them up each morning. Our cows were given some boiled wheat to keep them alive. . .
>
> The summer of 1856 was very dry and grasshoppers destroyed much of our crops.[1]

The heavy loss of cattle in the winter of 1855-56 had a significant impact on the ratio of crops versus livestock in subsequent years.

Population Growth During the First Twenty Years

Although the first settler had established himself in Kaysville in the spring of 1848, it was not until John Green, Edward Phillips and William Kay settled there in the spring of 1850, that the community settlement began to grow. From that time on additional settlers filtered into the region each year. Approximately 20 families constituted the

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1 Ivy Blood Hill, Biography of William Blood, pp. 20-21.

population in 1851 when the ward was organized but the population had grown to 295 by 1852, 417 by 1853, and 580 by 1858 according to the annual Bishop's Report. A breakdown of the population is given in Table XXVI.

Between 1852 and 1853 the total population increased by 122 persons or 41%, which was slightly higher than the 39% increase over the next two years. The most rapid rate of growth was during the first three year period--1850-1852. After that the rate of growth began to slow. The Bishop's Reports do not give a breakdown of the age or sex structure of the population, but a few facts can be gleaned from the report. Approximately one-third of the population was under eight years of age--a high proportion of infants and young children, indeed. Some indication of the adult male population is shown by the category "total authorities," since virtually all adult males held the priesthood, accounting for approximately one-fifth of the total population. There is no way to distinguish the percentages of females or teenagers.

The number of recorded births and deaths gives some idea of the growth rate in this new community, although it should not be regarded as a definitive measure. It may not have included births or deaths in families moving into the region, which occurred during the year but prior to their settlement in Kay's Ward, nor births or deaths in families moving out of Kay's Ward during the year. Nevertheless, it is evident that the birth rate was high. Thirteen births in 1852, twenty-four in 1853, and sixteen in 1855 would have produced an annual birth rate per thousand population of 44.1, 57.6 and 27.6 respectively. At the same time, four deaths in 1852, four in 1853 and one in 1855 would have produced an annual death rate per thousand of 13.9, 9.6 and 1.7 respectively. If the average death rate (8.4) is subtracted from the average birth rate (43.1) it would result

Table XXVII

KAY'S WARD BISHOP'S REPORTS

	1852	1853	1855
Seventies	25	47	28
High Priests	4	7	13
Elders	4	11	15
Priests	1	8	17
Teachers	2	8	14
Deacons	2	11	14
Total Authorities	38	92	101
Number not ordained (included all members over eight--male & female)	164	171	261
Total Authorities & Members	202	263	362
No. over 8 not baptized	2	15	15
Under 8 years of age	91	139	203
Total not baptized	93	154	215
Total in the Ward	295	417	580
No. on missions	0	5	7
Since October of previous year			
Baptized 1st time	2	3	2
Baptized 2nd time	12	22	55
Births	13	24	16
Deaths	4	4	1
Excommunications	0	0	0

Journal History, Dec. 3, 1852, pp. 1-3, Deseret News, Oct. 15, 1853, Journal History, Oct. 6, 1855, p. 2.

in an annual population growth rate of 3.5%. Clearly, Kay's Ward was experiencing a minor population explosion.

In 1858, Kaysville, along with all northern settlements, was evacuated during the Utah War. Most of the population returned in the fall of 1858, but Kaysville may have lost some of its residents through the move. The 1860 census recorded a population of 767, only an increase of 187 persons over the 1855 population, which was certainly a reduced growth rate from that experienced during the early 50's, when the population grew from 295 in 1852 to 417 in 1853--an increase of 122 persons in one year--compared to an increase of 187 persons over the five year period at the end of the decade.

A summary of the population characteristics in 1860 is given in Table XXVIII on the following page. The population consisted of 360 males and 407 females accounting for 46.94% and 53.06% of the population respectively. The ratio of males to females in the 20 to 30 age bracket was slightly less with females accounting for 56.83%.

One-fourth of the population of Kaysville in 1860 was born within the United States but outside of the Territory of Utah while 268 were foreign born. Of the latter, 236 (88%) were born in the British Isles, and 24 (9%) in Scandinavia. Five Kaysville residents were born in South Africa (white), two in Canada and one in Germany accounting for a total of 3% of the foreign born. The adult population of Kaysville was predominantly drawn from the British Isles even though the foreign born accounted for only 35% of the total population. Nearly 40% of the population was born in Utah and could not have exceeded 13 years of age.

The nature of the population had not changed significantly by 1870, although it had nearly doubled in size. A summary of the 1870 character-

Table XXVIII

POPULATION CHARACTERISTICS

KAYSVILLE 1860

Category	Number	% of total
Total	767	100
Male	360	46.94
Female	407	53.06
Under 15 years of age	392	51.11
Over 65 years of age	14	1.83

Nativity

Place of Birth	Number	% of total	% of Foreign Born
Utah	305	39.77	
Other U. S.	194	25.29	
British Isles	236	30.77	88.06
Scandinavia	24	3.13	8.96
Other	8	1.04	2.99

Calculated from U.S. 1860 manuscript population schedules.

istics are included in Table XXIX. A comparison with the 1860 table demonstrates a consistency in the general make-up of Kaysville residents. By 1870 the percentage of males had increased slightly but was still under 50%. The percentage of people under 15 and over 65 had dropped significantly but still comprised nearly half of the population.

The nativity of the population of Kaysville in 1870 is shown in Table XXIX. Fifty percent of the population was born in Utah and could not have exceeded 23 years of age, while approximately 40% of the population was foreign born. Consequently an overwhelming majority of the adult population was foreign born, as in 1860. Thirty-eight percent of the total population was born in the British Isles, accounting for 95.10% of the foreign born, an increase of approximately 7% over 1860. Sixteen Kaysville residents were born in South Africa, the only other significant contributor, and these were probably of British origin as well. Less than 1% of the population was born elsewhere abroad.

The Scandinavians in Kaysville had largely moved out by 1870. Their numbers were reduced from 24 in 1860 to 4 in 1870. Perhaps their minority status in Kaysville did not appeal to them.

The reason for the concentration of British stock in Kaysville seems to have been the attraction of friends and relatives. It was a common practice in Davis County communities to watch the Deseret News for publication of the names of individuals in the various companies enroute across the plains and their expected arrival dates. These companies were frequently met by a delegation of friends or relatives who proceeded to persuade the new arrivals to settle in those communities where their friends

or relatives lived.[1]

Occupational Structure

In addition to basic data on the nature of the population, the 1870 census schedules give considerable information about the economy of the settlement, since they also listed the occupation of each resident who professed one. These are summarized in Table XXX. Approximately 32% of those listing an occupation were farmers while an additional 127 (37%) listed themselves as farm laborers and three as herders. These agriculturalists combined with 2 miners accounted for a total of 70.35% of the working population. This high percentage of people employed in primary occupations stands in sharp contrast to the average number of primary occupations in the 12 selected settlements studied in Chapter IV. The mean for those communities was 44.03%, although Willard had a similar number of agricultural occupations (77.30%) as did Bountiful with 69.01%. These three communities are much more typical of what one might expect in Western frontier communities and is evidence of their rural character. The 37% of the population employed as farm laborers in Kaysville is also in keeping with similar figures for other northern communities--Bountiful, Farmington, and Willard. The emphasis on agricultural pursuits in Kaysville was no doubt influenced by the dispersed nature of the settlement and the fact that here, most of the farmers did not move inside the fort in 1854 but remained on their scattered farmsteads. A similar pattern existed in Bountiful, Farmington and Willard.

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[1]Glen Leonard, "A History of Farmington, Utah to 1890," (unpublished M.A. thesis, U. of Utah, 1966), p. 30.

Table XXIX

POPULATION CHARACTERISTICS

KAYSVILLE 1870

Category	Number	% of Total
Total	1,422	100.00
Male	703	49.44
Female	719	50.56
Under 15 years of age	665	46.77
Over 65 Years of age	16	1.34
15 to 65 years of age	738	51.90

Nativity

Place of Birth	Number	% of Total	% of Foreign Born
Utah	715	50.28	0
Other states and ter.	131	9.49	0
British Isles	544	38.26	95.10
Scandinavia	4	.28	.70
Other Europe	3	.21	.52
South Africa (white)	16	1.13	2.80
Canada	4	.28	.70
At Sea	1	.07	.17

Calculated from U.S. 1870 manuscript population schedules.

Table XXX

OCCUPATIONAL CHARACTERISTICS

KAYSVILLE 1870

	Number	Percent of those listing an occupation
Primary Occupations		
Farmer	110	31.98
Farm Laborer	127	36.92
Herder	3	.87
Miner	2	.58
Total Primary	242	70.35
Secondary Occupations		
Blacksmith	4	1.16
Brickmaker	4	1.16
Brick Mason	2	.58
Butcher	1	.29
Carpenter	13	3.78
Cooper	1	.29
Dyer	1	.29
Harness Maker	1	.87
Miller	3	.29
Plasterer	1	.29
Sawyer	1	.29
Shoe Maker	4	1.16
Stone Mason	1	.29
Weaver	2	.58
Wheelwright	2	.58
Total Secondary	41	11.92
Tertiary Occupations		
Domestic Servant	4	1.16
Figure Painter	2	.58
Hotel Keeper	1	.29
Laborer	43	12.50
Merchant	2	.58
Midwife	1	.29
School Teacher	1	.29
Store Keeper	5	1.45
Surveyor	1	.29
Teamster	1	.29
Total Tertiary	61	17.73
Total listing occupation	344	100.00

The dispersed pattern was not as conducive to the development of secondary and tertiary activities as were village settlements such as Brigham City and those in Utah County. Most of the secondary occupations shown in Table XXX are closely allied to agricultural production or the construction industry. Four blacksmiths in Kaysville demonstrates the importance of this trade in pioneer communities, which was responsible for new agricultural implements as well as repairing and maintaining those already in existence. Other allied occupations included harness maker, cooper, miller and butcher, which likewise produced agricultural equipment or processed agricultural products.

The other major industry in 1870 was construction. There were 13 carpenters, 4 brickmakers, 2 brick masons, 1 plasterer, and 1 stone mason. A number of the homes constructed during this period are still standing today. Some of the oldest homes were constructed with adobe which was often plastered over later, but kiln dried brick soon became the most popular building material in Kaysville and throughout the Wasatch Front. Clay soils in Kaysville were particularly well adapted to brick making and Kaysville brick gained an enviable reputation throughout the Davis and Weber County area.

The relatively small percentage of workers (18%) employed in tertiary occupations is indicative of the comparatively small proportion of the population living in the town itself. The most frequent tertiary occupation was that of common laborer--more than twice as many as all other tertiary occupations combined and some of these individuals may have worked part of the time in agriculture. The second most common service occupation was storekeeper, which included five persons, followed by domestic servant with four. Merchandising seems to have been quite well developed since

there were five storekeepers and two merchants. Kaysville would seem to typify the small western rural town which served as a central place for the exchange of goods and services for the predominant rural population surrounding it.

Land Acquisition and Size of Land Holdings

Because settlers at Kay's Ward arrived a few at a time over a period of years, land was acquired in no particular pattern. According to Barton, "there was no division of the land. A settler came in, saw a tract of land that suited him, and if not already occupied took it up by fencing it and living on it."[1] Later when the Surveyor-General was available he was brought to this area to survey the farm, which allowed the claim to be recorded by the county recorder. Unlike Box Elder County, the deed records in Davis County prior to the establishment of the Government Land Office have not been preserved. However, seven of the Kaysville 1857 consecration deeds are found among the collection of such deeds in the Church Archives in Salt Lake City. None of the Kaysville deeds described the property by lot number in the Big Field Survey or any other plat as was the case with Brigham City and Springville. If the deed described the property at all, the location was identified as being situated between specific creeks or on the north or south side of a particular creek.

The first adequate record of farm size is the 1860 agricultural census schedules--a summary of which is included in Table XXXI below.

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[1]Joseph Barton, cited by Thornley, p. 6.

Table XXXI

SUMMARY OF FARM SIZE IN KAYSVILLE
1860

Size Category (Acres)	No. of Farms	% of Farms	No. of Acres	% of Acres
1-14	19	27.14	174	9.29
15-39	41	58.57	939	50.13
40-99	7	10.00	360	19.22
100-200	2	2.86	200	10.68
200 plus	1	1.43	200	10.68
Total	70	100	1873	100

Source: Tabulated from the U. S. 1860 manuscript agricultural schedules.

Although farms in Kaysville were clearly larger tha those of Brigham City, they were still very small, averaging only 26.76 acres per farm. Nearly 59% of the farms were between 15 and 39 acres and 85% were smaller than 40 acres accounting for about 60% of the farm land. There were only three farms 100 acres or larger--two 100 acre farms and one 200 acre farm. All of the farms consisted of totally improved land except one which had an additional 10 acres of unimproved land.

The modest size of farms continued through 1870 when the average number of improved acres per farm was 28.21 and the largest farm was only 60 acres according to the agricultural census schedules. However, during the 1870's and 1880's farm size began to increase markedly. By 1880 the average farm had 66.60 acres of improved land and 63.68 acres of unimproved land. In 1860 only one farm included unimproved land amounting to ten acres. By 1870 eight farms (27% of the total) had some unimproved land averaging 8.89 acres each. The number had increased to forty out of forty-nine farms by 1880 with an average of 63.68 acres of unimproved

land. The instructions for the census taker states: "By 'improved land' is meant cleared land used for grazing, grass, or tillage, or lying fallow. Irreclaimable marshes and considerable bodies of water will be excluded in giving the area of a farm improved or unimproved."[1] Thus the expansion of farms to include larger and larger acreages of unimproved as well as improved land represented the inclusion of unclaimed land that previously had been open grazing. With the construction of high level canals more and more land could be irrigated. Dry farming also became increasingly significant to the north of Kaysville through the 70's and 80's.

The trend toward larger farms is perhaps best illustrated by the listing of land holdings in the county tax records. The earliest record available for the Kaysville precinct is in 1877. These property sizes are summarized in Table XXXII below. A similar summary was also completed for the year 1889, twelve years later, and is included in Table XXXII. In 1877 the largest farm was 311 acres and there were nine farms over 200 acres, accounting for 23.72% of all the property listed in the tax rolls. There were 19 farms between 100 and 199 acres, accounting for another 28.32% of the properties. Thus, by 1877 over half of the property in the Kaysville precinct was alloted in farms exceeding 100 acres in size. This represented a substantial growth in farm size from 1870, when the average farm was about 28 acres. In 1877 a third of the farms were between 40 and 99 acres in size while only 15% of the farms were under 15 acres, in size which accounted for only a little over 2% of the taxable property.

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[1]Wright & Hunt, History of the Census, p. 156

Table XXXII

TAXABLE PROPERTY IN KAYSVILLE

1877

Property Size	No. of Farms	% of Farms	No. of Acres	% of Total Acres
200 plus	9	6.67	1,911	23.72
100-199	19	14.07	2,282	28.32
40- 99	45	33.33	2,722	33.79
15- 59	41	30.37	970	12.04
Under 15	21	15.56	172	2.13
Total	135	100.00	8,057	100.00

Mean acres per farm=59.68

1889

200 plus	16	8.12	5,656	38.63
100-199	27	13.71	3,540	24.17
40- 99	68	34.52	4,296	29.34
15-39	34	17.25	938	6.41
Under 15	52	26.40	213	1.45
Total	197	100.00	14,643	100.00

Mean acres per farm=74.33

Computed from land holdings exceeding one acre listed in the Tax Rolls for 1877 and 1889 in Kaysville, Davis County, Territory of Utah, Davis County Court House.

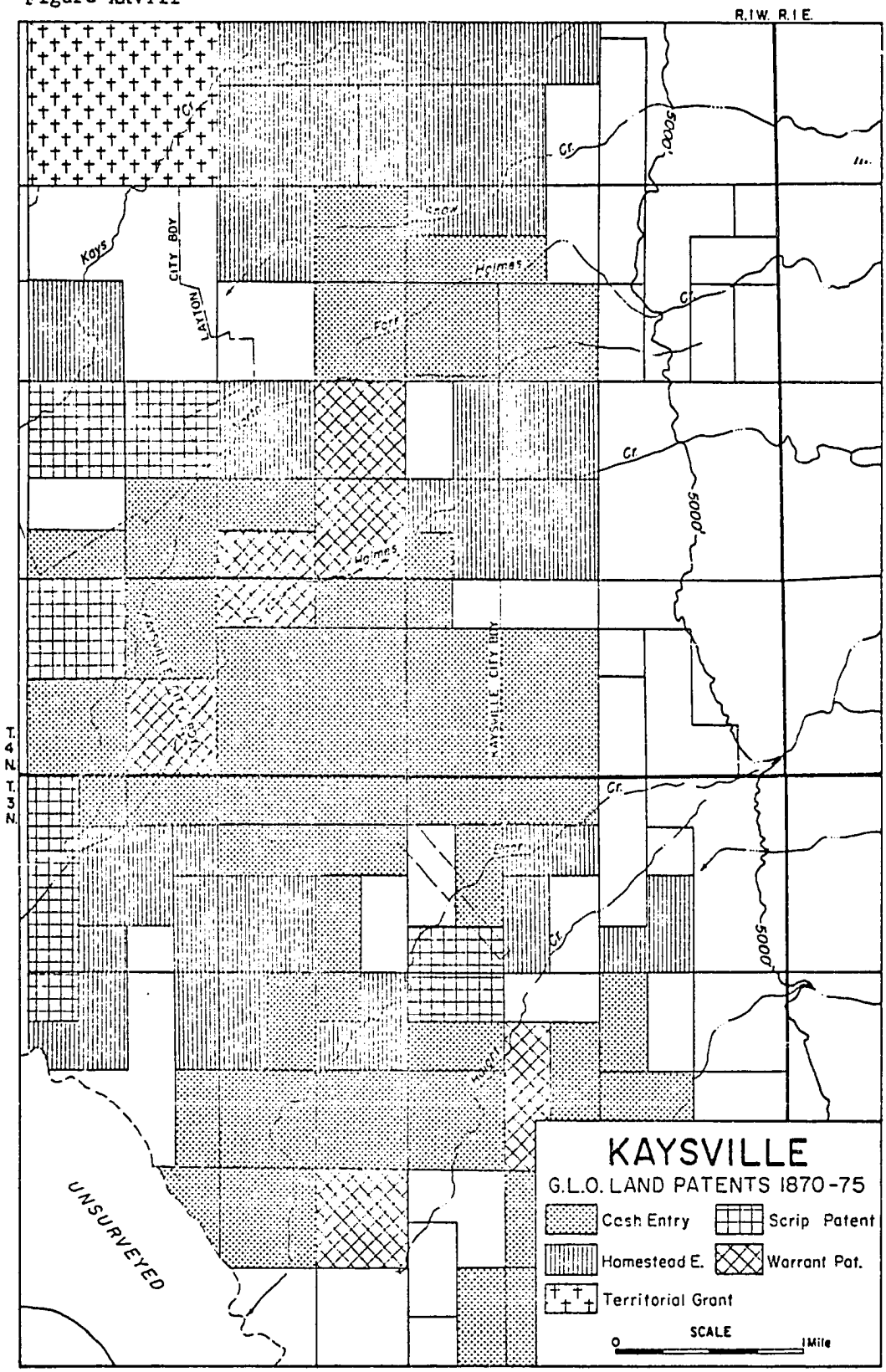
The growth in farm size continued through the next decade. By 1889, twelve years later, the largest farm was 817 acres and there were sixteen farms over 200 acres in size, accounting for 38.63% of the taxable property. The number of farms between 100 and 199 acres had risen to 27 or 13.71% of the farms and accounted for 24.17% of the property. Still, the largest number of farms was between 40 and 99 acres. Sixty-eight farms fell within this category and still accounted for approximately one-third of the taxable property.

In summary, farm size in Kaysville was always larger than the farm size in Brigham City, but still very modest; the main restrictions being the amount of land that one farmer could fence and irrigate individually. Like Brigham City, however, the farms in Kaysville continued to get larger through time. By 1887 average farm size had grown to 74.33 acres and 63% of the farmland was in properties of 100 acres or more. At the same time the number of property owners owning less than 15 acres had increased from 15.56% in 1877 to 26.40% in 1887. This is a reflection of the growth of urbanization in the town of Kaysville with an increasing number of people buying town lots. The census tabulations show that much of the increased acreage was in unimproved land, probably meadow land used primarily for pasture. In 1860 there were only 10 acres of unimproved land included in the census. By 1870 there were 80 acres in this category but this jumped to 4,055.14 acres in 1880.

Government Land Patents

The residents of Kaysville like those of Brigham City were anxious to gain title to the land after the Government Land Office was established in Utah in 1869. Within the area included in Figure XXVIII, 1,689 acres were patented in 1870 and an additional 3,240 acres were filed as

Figure XXVIII

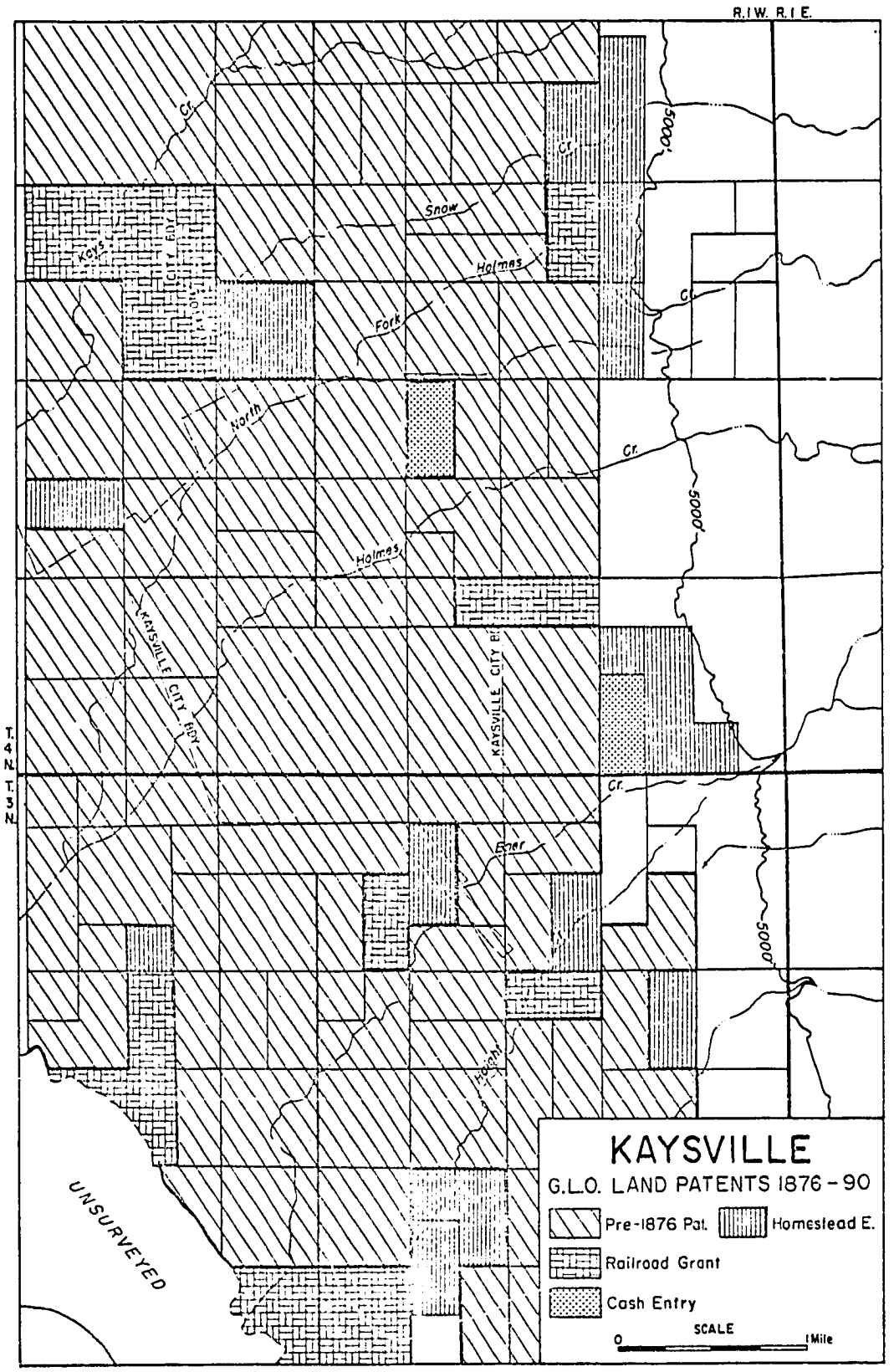


homesteads resulting in patents in 1875. During the first five years 9,910 acres of this land were alienated by the government. The highest percentage was in cash entries,which accounted for 4,790 acres, or 48.34% of the land patented by private individuals. Next were homestead entries with 3,480 acres,which accounted for 35.12% of the G.L.O. patents. During the same period 848 acres were alienated as script patents, accounting for 8.48% and 800 acres as warrant patents, accounting for 8.06%. In addition, one section or 640 acres was granted to the territory for school land.

In contrast to this rapid rate of acquiring land titles during the first five year period, only 1,440 acres of land were patented by private individuals over the next 15 year period--1876 to 1890. The land that was already under cultivation, which included most of the area within the map, was acquired early, and the less desirable land was left until later. The hilly land near the 5,000 foot contour was avoided by these first claims, but was claimed by 1890 (see Figure XXX).

Like Brigham City, the most common type of land patent was cash entry. It accounted for nearly half of all land alienated during this first five year period. The largest single entry, of course, was the town site grant in 1872, amounting to 1,280 acres of land, which was granted to the mayor, Thomas Rouche, as trustee for the inhabitants thereof. Although a very distinctive spatial pattern is not evident, there is a definite trend toward warrant, scrip, and cash entries west of the Kaysville town site, along the drainage of the north fork of Holmes Creek, and along the lower portion of Baer and Haight Creeks. In general these represent lands that were settled first, while homesteads were clustered in the area to the north of Kaysville, except along the north fork of Holmes Creek, and in the area southwest of Kaysville between Baer and

Figure XXIX


R.1W. R.1 E.
T.4 N.
T.3 N.
Snow
Holmes
Fork
North
Holmes
Cr.
5000'
KAYSVILLE CITY BDY.
UNSURVEYED
KAYSVILLE
G.L.O. LAND PATENTS 1876 - 90
Pre-1876 Pat.
Homestead E.
Railroad Grant
Cash Entry
SCALE
0
1 Mile

Holmes Creeks. These areas by-and-large were occupied later and frequently represented grazing and dry farmed lands. As with Brigham City, there was a trend where the land had been occupied the longest and was laready divided into numerous farms to gain patents via cash entry, warrant or scrip patents so that title could be obtained immedidately. The higher land to the north in Layton, and the upper portion of Holmes Crcek was acquired under the more prolonged, but cheaper route of homesteads.

The government land records distinguishes between warrant and scrip patents even though the military warrants were also a form of scrip. Scrip patents were granted to individuals for several reasons, but the most common scrips were those granted to states in 1862 as part of the land grants for the establishment of colleges, for the benefit of agriculture, and mechanic arts. This act gave to each state 30,000 acres of public land for each senator and representative in Congress. In those states where a sufficient amount of public land was no longer available, scrips for an equivalent amount of land was given to the state which then sold the scrips to private individuals and used the proceeds for the establishment of land grant colleges. The scrips were sold for $1.25 an acre and the purchaser could then claim his land in any state or territory where public land was available.[1] A sample scrip patent in Kaysville is given below.

> The U.S. of America: To all to whom these presents shall come, Greetings: Whereas; in pursuance of the act of Congress approved July 2, 1862 entitled An Act Donating

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[1]Thirty Seventh Session of Congress, Sess. II, Chap. 130, "An Act Donating Public Lands to the Several States and Territories which may provide Colleges for the Benefit of Agriculture and Mechanic Arts," July 2, 1862, p. 503.

> Public Lands to the Several States and Territories which may provide colleges for the benefit of Agriculture and the Mechanic Arts, there has been deposited in the G.L.O. Scrip No. 542 for one 1/4 section of land in favor of the State of South Carolina, duly assigned by proper authority of the said state to John Flint with evidence that the same has been located upon the NW1/4 of Sec 33 T4N R1W SLM subject to sale at Salt Lake City, Utah Territory containing 160 acres.[1]

After 1875, there were only scattered parcels of land left to acquire. Railroad grants accounted for the bulk of the land remaining. Since the claims of prior occupants came first, the railroad did not receive every other section but only scattered tracts of land sometimes in lots as small as 40 acres. The railroad patents shown on Figure XXX were all granted in 1877.

Practically all the land acquired by private individuals after 1875 was by homesteads. These were located primarily on the higher bench lands to the east which would be used for dry farming or grazing. The 5,000 foot contour marks a fairly distinct eastern boundary of patented land.

Persistence

Kaysville, as well as Brigham City experienced a substantial turnover in its population during its first 40 years of existence although it was not as high as the latter. The 1852-53 Bishop's Reports listed the names of 51 heads of families. At this time there was no town of Kaysville; all of the residents were living on scattered farms. It seems safe to assume that virtually all of these people were farmers or grazers. This list was checked, therefore, against those listing themselves as

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[1]Patent on file, Bureau of Land Management, Salt Lake City, Utah.

farmers on the 1860 census. Only 15 (29.41%) of those heads of families in 1853 appear as farmers in 1860; i.e. less than a third of these families were still farming 7 years later. By 1870 twelve of these same names (23.51%) were listed as farmers and 13 (25.49%) in 1880. Evidently if a farmer stuck it out for the first ten years he was pretty apt to stay on indefinitely.

A similar pattern is evident with a comparison of later censuses. There were 86 farmers in 1860, 28 of whom (32.56%) were still there in 1870. This was a slightly higher rate of persistence than during the decade of the 50's; but it dropped to 19 (22.09%) during the second decade which was a larger drop than occurred during the 60's. In both cases less than a third of the farmers were still there 10 years later and less than a fourth 20 years later. Again in 1880 only 31 (28.18%) of the 1870 farmers reappeared on the census. It thus appears that about two-thirds of the Kaysville farmers did not remain for as much as one decade and three-fourths did not remain for two decades. A few of these, no doubt, died and some may have moved into town and taken up other occupations, but there seems little doubt that the bulk of them moved away. The turnover during the 70's might have been accelerated by polygamy persecution and by increasing farm size which would have crowded some individuals out, and some successful farmers may have been attracted to frontier settlements where larger farms were available, yet the rate of turnover was not significantly different than that of earlier decades.

The increasing recurrence of surnames on each succeeding census reflects a greater number of grown sons who had become farmers in their own right. There were numerous cases where four or five farmers on each census had the same surname. Yet less than 50% of the surnames on each

Table XXXIII

RECURRENCE OF SAME NAMES AND SAME SURNAMES
AMONG FARMERS OF KAYSVILLE

Years	Same Name	Percent	Additional Farmers with same surname	Total Surnames	% of total average population represented by surnames on previous census
1853-1860	15	29.41	9	24	27.91
1853-1870	12	23.51	17	29	26.36
1853-1880	13	25.49	28	41	28.87
1860-1870	28	32.56	21	49	44.55
1860-1880	19	22.09	38	57	40.14
1870-1880	31	28.18	33	44	45.07

Heads of Families in 1853. . . .51

Number of Farmers in 1860. . . .86

Number of Farmers in 1870. . . 110

Number of Farmers in 1880. . . 142

1853 Bishop's Report

Manuscript U.S. agricultural census schedules.

census occurred on the previous record. Over half of the farmers at each census year were newcomers to the community who had arrived within the decade. Mobility seems to have been a persistent pattern from the beginning of Mormon settlement.

PART III

SPRINGVILLE

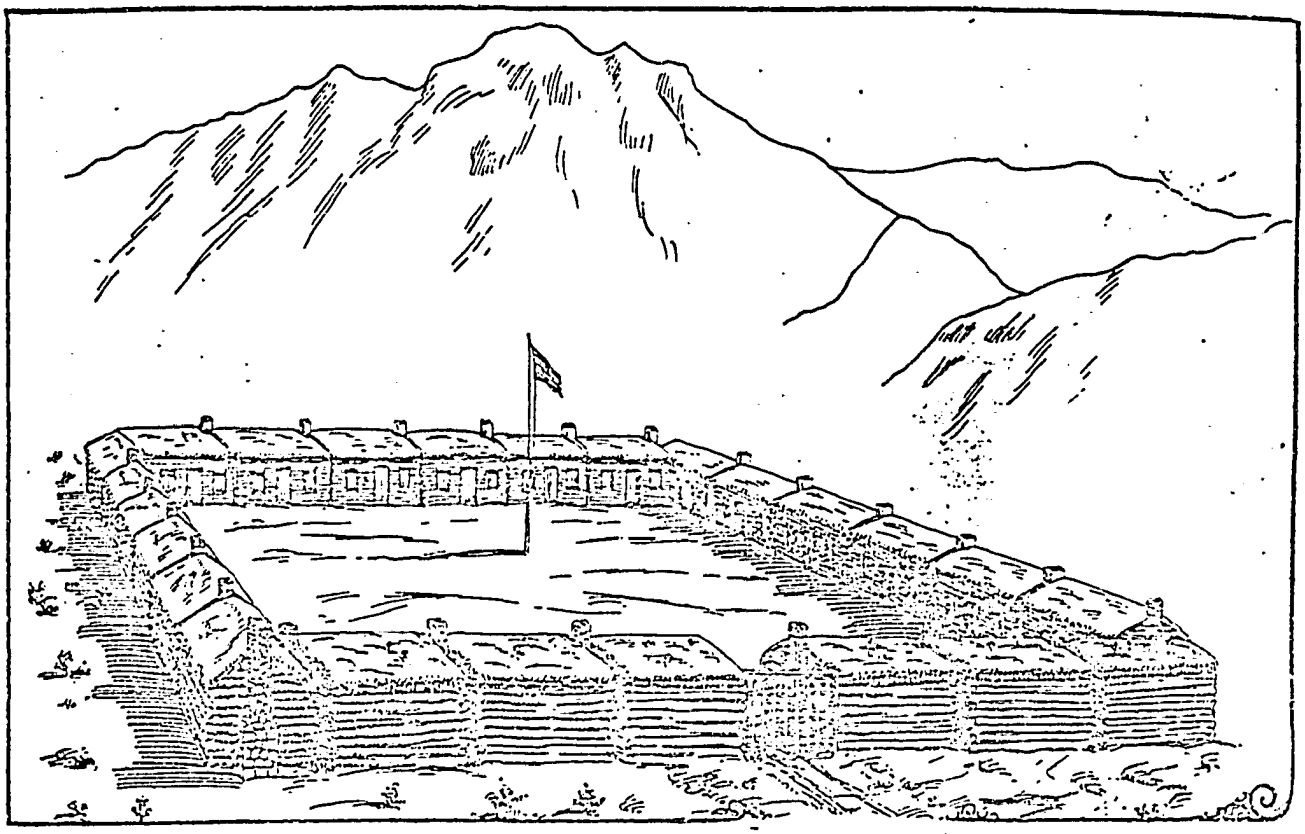
Initial Settlement

The initial settlement in Springville differed significantly from that of Brigham City and Kaysville. Here the comparatively dense Indian population delayed settlement in Utah Valley even though the first explorers in 1847 were very favorably impressed with the region. It was not until April of 1849 that an organized company was sent into Utah Valley to establish Fort Utah at the present site of Provo. As related earlier in this report, hostilities broke out between these new residents at Provo and the surrounding Indians in February of 1850. A force of 200 volunteers from Salt Lake City were organized, equipped and sent down to aid in the defense of the newly founded fort. William Miller, one of the participants in that expedition, explored the southern portion of Utah Valley as far as Payson following the battle. He was particularly impressed with the Hobble Creek region and resolved to return with friends and make a permanent settlement here.

After returning to Salt Lake City he discussed his plans with Brigham Young who readily agreed to the scheme. He arranged to have his friend Aaron Johnson, who was then enroute across the plains, to be assigned to Hobble Creek when he arrived at Salt Lake City. While waiting for the Johnson Company to arrive, Miller toured the area again with his wife, Phoebe, who was equally impressed with its potential. When the Johnson wagon train arrived in Salt Lake Valley in September of 1850, Johnson was immediately met by Miller, who informed him that a site for his home had already been selected and all arrangements made for them to establish a new settlement on Hobble Creek. Johnson, however, insisted on seeing the

Figure XXX

OLD SPRINGVILLE FORT



THE OLD FORT. BUILT IN THE AUTUMN OF 1850. (Sketched from memory)

Source: Don Carlos Johnson, A Brief History of Springville, Utah (Springville: William F. Gibson, 1900), frontisiece.

region first and after a few days' rest in Salt Lake City, accompanied by Miller, made a reconnaissance trip by horseback to satisfy himself of its possibilities. During this inspection tour they looked over the entire area carefully and selected the spot where the town would be built. They then returned to report their findings to Governor Young, who then issued an official "call" for them to establish a settlement at Hobble Creek.

> Brigham Young went down to the immigration square where Johnson's company was corralled and cut out the first eight wagons of the company of which Johnson was captain and said they were to go to the selected locality and build a fort which would be merged into a town as soon as would be practicable.
>
> It was understood that Aaron Johnson was to be the District Judge of Utah County and William Miller associate Justice.[1]

Thus, Springville in contrast to Brigham City and Kaysville was a directed settlement with first settlers chosen by Brigham Young himself, to establish a fort which he expected to see develop into a full-fledged town.

Even here, however, individualism played a very important role. William Miller selected the location because he liked it and then went to Brigham Young to gain approval for establishing a settlement. In addition, it was Miller that suggested that Aaron Johnson be called to assist in establishing the new settlement. Before Johnson agreed to this arrangement, however, he insisted on seeing the region himself before committing his family and friends to this location. It was after these preliminary arrangements had been made that Brigham Young selected the eight

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[1]Don Carlos Johnson, A Brief History of Springville Utah from its First Settlement, (Springville Utah: William F. Gibson, September, 1900), p. 3. Fortunately this detailed history was written by the son of Aaron Johnson in 1900, who had access to his father's journal and could still interview several of the first residents who had been there for the 50 years. The present sketch of early Springville settlement relies heavily on this source.

families to accompany William Miller to the Hobble Creek region in the fall of 1850.

Thirty-six settlers comprised the pioneer emigration company to Hobble Creek, 20 of whom were adults and 16 children. They arrived at their destination on September 18, 1850. Upon arriving some of the men immediately set about mowing the luxuriant grass which grew in every direction, to be stored as hay, while others began cutting logs from the nearby canyon to be used in the construction of the fort. The fort was built on high ground on the north bank of Hobble Creek and covered 1 1/2 acres of land. It was constructed of log block houses that were locked together at the corners. There was one continuous clay roof. The doors and windows all opened into the interior of the court (see Figure XXX). There were two large gates, one on the east and one on the west which were the only means of leaving or entering the fort.[1] (Johnson's sketch of the fort, however, shows only one gate.) In case of an attack the cattle could be driven into the courtyard for security. Before the work of building the fort and gathering the hay was completed, additional families had joined the first pioneers and helped to hasten completion of the winter preparation.

In addition to the rapid preparation for winter, a survey was begun of farm land and the townsite which was not completed until the spring of 1851.[2] The first public building to be completed was a log schoolhouse. It served not only as a school but also as a center for all church and social gatherings. Although most of the buildings in the new settlement

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[1]Johnson, History of Springville, p. 7.

[2]Ibid., p. 10.

were constructed of logs, an adobe yard was also established that same fall.[1]

In the spring of 1851 canals were constructed to take water from both sides of Hobble Creek to irrigate the land. As with Brigham City and Kaysville, the first settlers were afraid that there was not water enough to support a large number of additional farmers. A few new settlers arrived in the spring of 1851, but they were not encouraged to stay because the initial pioneers considered the water only sufficient to sustain about 20 families.[2] Johnson states, "In the beginning, small farms of 20 acres were alloted to each, as it was believed that not over 100 families could be maintained in the vicinity upon 20 acre holdings in consequence of the scarcity of water."[3] Additional settlers continued to arrive however, and as with Brigham City and Kaysville, there seemed to be enough water to sustain them.

Ecclesiastical Organization

On March 20, 1851 the new settlement was honored with a visit from Brigham Young and other dignitaries from Salt Lake City.

> At seven in the evening the schoolhouse in Springville was filled with people and was addressed by the Presidency until 9 p.m. They afterwards ordained Asahel Perry as President of the Branch at Springville and Noah Packard and Stephen C. Perry as counselors; Aaron Johnson to be the Bishop of the Branch with William Miller and Myron Crandall as his counselors.[4]

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[1] Johnson, History of Springville, p. 8.

[2] "Springville Ward History," MS, pp. unnumbered.

[3] Johnson, History of Springville, p. 10.

[4] Journal History, March 20, 1851.

This newly founded branch was thus given two sets of officers--a Bishop with two counselors and a Branch President with two counselors. Four years later at a General Conference held in Salt Lake City April 6, 1855, Asahel Perry was ordained a Patriarch and relieved from his duties as President of the Branch at Springville and Aaron Johnson was appointed to serve as President of the Branch as well as Bishop.[1] The functions of this double organization are not clear but presumably the Bishop was the presiding authority and handled all of the financial affairs of the infant settlement.

Population Growth

According to Johnson's account there were 34 people in the initial pioneer group who settled Springville in 1850. A few additional settlers joined the group later that fall and more came in the spring of 1851. In fact Springville continued to attract new settlers resulting in a rapid and sustained rate throughout the decade. The Bishop's Report of 1852 did not give a breakdown by ward in the Provo Stake but the 1853 and 1855 reports did. The Springville data are included in Table XXXIV. By 1853, just three years after the initial settlement, the population of Springville had reached 799--four times the size of Brigham City and nearly twice the size of Kaysville. There were 45 births and 12 deaths recorded that year which, if representative of all years, would produce an annual growth rate of 4.1%. That this is not representative is shown by the 1855 report which recorded only 25 births and 3 deaths resulting in an annual growth rate of 2.5%. The true rate of natural increase was probably about 3%.

The high birthrate is reflected in the number of children under eight

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[1]Deseret News, 5:36 cited in "Springville Ward History," MS, L.D.S. Church Archives, Salt Lake City, Utah.

years of age. In both 1853 and 1855, 34% of the population was under eight years of age while adult males (total authorities) comprised only 14% of the population in 1853 and 16% in 1855. Apparently the relatively high number of women and children which seemed to characterize all Mormon settlements in 1870 was already the norm by 1853.

One other statistic on the report is worth noting. There were no excommunications listed for Springville nor Kaysville on any of the Bishop's Reports and only two in 1855 in Brigham City. Evidently excommunication, which was sometimes used as a threat to assure conformity to church regulations, was seldom applied.

The more rapid growth in Springville than in Kaysville or Brigham City is indicative of the greater interest exhibited by Church officials and lay members in southern communities versus northern ones. There was an organized effort to colonize southern Utah and some of those prospective settlers stopped in Utah County instead of proceeding southward as directed, much to the dismay of Church leaders. George A. Smith stated on October 20, 1861:

> It has been my lot to take part in the starting of settlements in the southern portion of this Territory; I have assisted in settling the country from the cotton district in Washington County to Utah mountain. It used to be nearly as much work to get a man to go to Iron County as it was for John Bunyan in the Pilgrim's Progress to get poor Christians into heaven. When I got them started south, they would meet at every settlement on the road, men who would discourage them by saying, "You are going to a poor country, oh how I pity you, you will starve in that miserable country, here is a good piece of ground close by me, you had better stop, I can sell you all the grain you will want for seed and to eat; you are going away out of the world." In this way hundreds of those who were counseled to go to the far south were stopped in Utah County, or turned aside from fulfilling what was desired of them.[1]

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[1]George A. Smith, Journal of Discourses, Vol. 9, p. 201.

Table XXXIV

SPRINGVILLE WARD BISHOP'S REPORTS

	1853	1855
Seventies	57	56
High Priests	15	19
Elders	23	34
Priests	10	18
Teachers	6	11
Deacons	0	2
Total Authorities	111	140
Number not ordained (includes both males & females over eight)	372	417
Total Authorities & Members	483	557
Number over 8 not baptized	44	34
Under 8 years of age	272	304
Total not baptized	316	338
Total in the Ward	799	895
Number on missions	2	3
Since October of the previous year		
Baptized 1st time	17	10
Baptized 2nd time	126	197
Births	45	25
Deaths	12	3
Excommunications	0	0

Source: Deseret News, Oct. 15, 1853.

Journal History, Oct. 6, 1855.

By 1860 the number of inhabitants in Springville had grown to 1,358 according to the U. S. census--a 51.7% increase over the population recorded in 1855 on the Bishop's Report. The population in 1858 may well have exceeded that of 1860 due to the temporary encampment of many of the northern settlers in Utah Valley. The 1860 census indicated 60 unoccupied dwellings in Springville. As indicated in Chapter IV this probably represented temporary housing constructed during the influx of population in 1858.

A full breakdown of the population characteristics of Springville in 1860 is shown in Table XXXV. Springville was rather typical of Wasatch Front communities. The population was divided about equally between males and females (51% vs. 49%) and over half of the total population was under 15 years of age leaving only 48% of the people between 15 and 65. This was very similar to the age structure for Kaysville that same year.

The nativity characteristics were quite different however. In Kaysville only 25% of the population was born in the United States outside the Territory of Utah compared to 42% in Springville. At the same time those born in the British Isles comprised over 30% of the population in Kaysville but only 18.56% in Springville. In Kaysville people born in the British Isles clearly predominated among the adult population while U. S. citizens born outside of Utah comprised the dominant adult population in Springville. Canadians were also much more prominent in Springville, where 39 of them lived in 1860 accounting for 2.85% of the population, while Scandinavians were less common numbering only 7 in Springville. Both Kaysville and Springville differ markedly from Brigham City where Scandinavians comprised the majority of the adult population.

Table XXXV

POPULATION CHARACTERISTICS

SPRINGVILLE 1860

Category	Number	% of Total
Total	1358	100
Male	698	51.40
Female	660	48.60
Under 15 years of age	700	51.55
Over 65 years of age	18	1.33

NATIVITY

Place of Birth	Number	%of Total	% of Foreign Born
Utah	486	35.79	
Other U.S.	571	42.05	
British Isles	252	18.56	83.72
Scandinavia	7	.52	2.33
Canada	39	2.87	12.96
Other	3	.22	1.00

Calculated from U.S. manuscript population schedules.

Table XXXVI

POPULATION CHARACTERISTICS

SPRINGVILLE 1870

Category	Number	% of Total
Total	1660	100
Male	850	51.20
Female	810	48.80
Under 15 years of age	827	49.82
Over 65 years of age	18	

NATIVITY

Place of Birth	Number	% of Total	% of Foreign Born
Utah	870	52.41	
Other U.S.	410	24.70	
British Isles	330	19.88	86.84
Scandinavia	13	.78	3.42
Canada	19	1.14	5.00
Other	18	1.08	4.74

Compiled from U.S. 1870 manuscript population schedules.

A similar table was prepared for 1870 (see Table XXXVI). It is apparent that the basic patterns in age and sex structure were pretty well set by 1860 and remained fairly stable after that. The population remained about evenly divided between the sexes with males still holding a slight edge. Children continued to be the dominant age group although those under 15 did drop from nearly 52% to 49%. As one might expect from recent participants in a major migration, the population was basically one of young people with very few persons over 65 (1.33%). The nativity of the population did undergo some change but this was primarily the result of maturation of the native born which could be expected with such a high number of children under 15 years of age in the previous census. The percentage born in Utah increased from approximately 36% in 1860 to 52% in 1870. The number of people born in other states or territories declined in actual numbers from 571 to 410 and in percentage dropped from 42% to 25%--a decline of 161 individuals or 28%. There were 6 more Scandinavians in 1870 than in 1860 and 10 fewer Canadians. The above statistics indicate some turnover but the basic structure of the population changed very little after 1860.

The rate of growth, however, did vary over the decades. The population of 1,660 in 1870 represented a 23% increase over 1860 while the population of 2,312 in 1880 represented a 39% increase over 1870. There were two periods of accelerated growth, the first occurring during the decade of the 50's when Springville grew from 36 at the time the colony was founded in 1850 to 1,358 by 1860; the second was during the 1870's when the population increased by nearly 40%.

Economic Structure

For purpose of comparison, the occupational data for Springville

Table XXXVII

OCCUPATIONAL STRUCTURE

SPRINGVILLE, 1870

Primary Occupations	Number	% of those listing an occupation
Farmer	144	43.24
Farm Laborer	31	9.31
Total	175	52.55
Secondary		
Blacksmith	6	1.80
Adobe Maker	2	.60
Carpenter	12	3.90
Cooper	1	.30
Gunsmith	1	.30
Harness Maker	1	.30
Miller	1	.30
Plasterer	1	.30
Sawyer	4	1.20
Shoe Maker	5	1.50
Stone Mason	3	.90
Tailor	1	.30
Tanner	2	.60
Wheelright	1	.30
Wool Carder	1	.30
Cabinet Maker	2	.60
Total	44	13.21
Tertiary		
Domestic Servant	5	1.50
County Assessor	1	.30
Doctor	1	.30
Laborer	72	21.62
Freightor	9	2.70
Gardener	6	1.80
Merchant	1	.30
Midwife	1	.30
School Teacher	1	.30
Store Clerk	1	.30
Teamster	9	2.70
Trader	5	1.50
Peddler	1	.30
Figure Painter	1	.30
Total	114	34.23

Tabulated from U. S. 1870 manuscript population census schedules.

were tabulated from the manuscript population schedules in 1870 and are shown in Table XXXVII. Farming was certainly the most common occupation accounting for 43.04% of those employed which was considerably higher than Brigham City with 26.91% or Kaysville with 32%. However, it is in the number of farm laborers that Springville really stands apart from the other two communities. Springville had only 9% employed as farm laborers while Brigham City had slightly over 28% and Kaysville had nearly 37%. Thus while the total number of individuals employed in the agricultural sector accounted for nearly 53% of the population in Springville, it comprised 69% in Kaysville and 55% in Brigham City. It appears that Brigham City and Springville, both village type settlements, had more in common than Kaysville which was largely dispersed.

Brigham City had the highest percentage of population employed in the secondary sector of the economy (18%) while Kaysville had the lowest with 12%, but Springville was practically identical with 13% employed in this category. In the tertiary sector of the economy, Springville ranked highest with 34% compared to 12% for Kaysville and 26% for Brigham City. The village pattern in Springville and Brigham City resulted in a higher percentage of people employed in goods and services. However, in regard to farm laborers, it was Springville that stood alone although it was very similar to other Utah County communities, but differed markedly from the central and northern settlements.

Land Acquisition and Size of Land Holdings

Although Johnson states that the original farms were surveyed into 20 acre lots, Utah County deed records identify some larger farms surveyed as part of the "Hobble Creek Survey--State Road Baseline," in 1851-52.[1]

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[1]Utah County Deed Records, Book A, 1851, p. 27.

These properties were identified by lot number, block number, range, and number of acres. Three of the seven properties recorded were owned by one person--James Porter--accounting for a total of 127 acres.

Although the limited number of deeds recorded in 1851 indicates that farms were originally surveyed into 40 acre lots, with some even larger, most farms were apparently not that big. The deed records also show a summary of land transfers in 1853 and 1854. Most of these represented transfers of land from one individual to another and the price of purchase is indicated. Others may have been first claims to the land since only one name (the recipient) appears on the transfer. There were 29 such entries of land units larger than city lot size. These averaged 37.41 acres per unit, but this figure is distorted by one large land transfer of 310 acres. If this transfer is excluded, the average is 27.6 acres per unit. There were seven transfers of 10 acre farms, seven of 20 acres and six of 40 acres. Of 21 transfers listed the following year (1854), eleven were for 10 acres, six for 20 acres, three for 40 acres, and none larger than 40 acres. The average for 1854 was 18.1 acres per unit. Apparently as population increased, the land was divided into smaller and smaller units, many of them being less than 20 acres in size. It should be noted, however, that several of these transfers of land represented more than one purchase by one individual. While the general trend was toward smaller farms, apparently some farmers were increasing their acreage.[1]

The Consecration Deeds of 1857 also offer some indication of farm size. These deeds identified land in the Springville Farm Land Survey--

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[1]Utah County Deed Records, Book A, pp.204-209.

Plats A, B, C and D as well as in the Meadowland Survey and the Maple Canyon Survey. In addition there were many properties of small acreage identified by lot number in the Building Lot Survey. The arithmetic average for the Consecration Deeds of farm land was 33.48 acres--the largest farm being 90 acres and the smallest 10 acres. Most of the larger properties included some land in the Farmland Survey and some in the Meadowlands. Unfortunately, the plats for Utah County, as with Davis and Box Elder counties, have not been preserved and it is not possible to identify the present location of these early surveys.

Changing Farm Size

By 1860 the average size farm in Springville was 20.39 acres, but 43% of the farms were under 15 acres and 45% were between 15 and 39 acres. A total of 88% were less than 40 acres in size accounting for 64% of the total farmed land. A summary of changes in farm size is shown in Table XXXVIII. Clearly Springville was a community of small farms in 1860. Only 13 out of a total of 109 farms were over 40 acres and only 2 over 100 acres.

In 1870, however, the pattern was beginning to change. Eighty percent of the farms were still under 40 acres but they only accounted for 43% of the total acreage rather than 64%. At the same time the number of farms under 15 acres increased from 47 to 71 amounting to a 53% increase. Larger farms were also becoming more numerous, with those between 40 and 99 acres amounting to 15% of the farms and 31% of the farm land, while farms of 100 acres or more now accounted for 5% of the farms and 26% of the farm land. Springville was still a community of small farms in 1870 with farms in the smallest category being the most numerous, but a few larger farms were emerging. The average farm was 25.58 acres--

SIZE OF FARMS IN SPRINGVILLE

Tabulated from U. S. agricultural manuscript census schedules

1860

Size (acres)	No. of Farms	% of Farms	No. of Acres	% of Total (acres)
1--14	47	43	389	17
15--39	49	45	1,034	47
40--99	11	10	570	26
100 plus	2	2	230	10
Total	109	100	2,223	100

Mean Farm Size = 20.39 acres

1870

1--14	71	49	561	15
15==39	45	31	1,028	28
40--99	22	15	1,137	31
100--200	7	5	983	26
Total	145	100	3,709	100

Mean Farm Size = 25.58 acres

1880

1--14	6	7	74	1
15--39	27	32	722	14
40--99	35	42	1,936	37
100--200	14	17	1,968	37
200 plus	2	2	555	11
Total	84	100	5,255	100

Mean Farm Size = 62.56

Tilled acres 4,029

Meadow or pasture land 1,226 acres

an increase of five acres per farm over 1860.

A drastic change in farm size occurred between 1870 and 1880--the number of farms under 15 acres dropping from 71 to 6. Farms of this size accounted for nearly half of the total number of farms in 1870 but only 7% in 1880. At the same time the total number of acres in this size category had dropped from 561 to 74 acres, accounting for only 1% of the total farm acreage in 1880. There was also a significant drop in the number of farms between 15 and 39 acres. In 1870 there were 45 farms in the latter category accounting for 31% of the total compared to 27 in 1880. Still, they accounted for 32% of the farms because of the drastic reduction in the smaller farms. The basic trend is revealed by the change in the total number of farms and the total acres of farm land. The number of farms dropped from 145 to 84 while the number of acres of farm land rose from 3,709 in 1870 to 5,255 in 1880. The average farm rose from 25.58 acres to 62.56 acres. The tiny farms under 15 acres in size were drastically reduced, while at the other end of the scale, the number of farms over 100 acres had risen from 7 to 16, accounting for 19% of the total number of farms. By 1880 two farms exceeded 200 acres in size--the largest being 315 acres. The 1880 census also distinguished between tilled land and pasture or meadow land. Nearly all Springville farms included some land in each category, but by far the bulk of the farm land (4,029) acres was tilled.

The 42% reduction in the total number of farms from 1870 to 1880 contrasted with the 41% increase in the total farm acreage indicated that there must have been a number of farmers who were buying out their less successful neighbors. Only 35 of the 145 farmers listed in the agricultural schedules in 1870 appeared in the 1880 schedules. The total acres of

farm land owned by these 35 farmers increased by 1,413 acres or an average of 41.56 acres per farm.

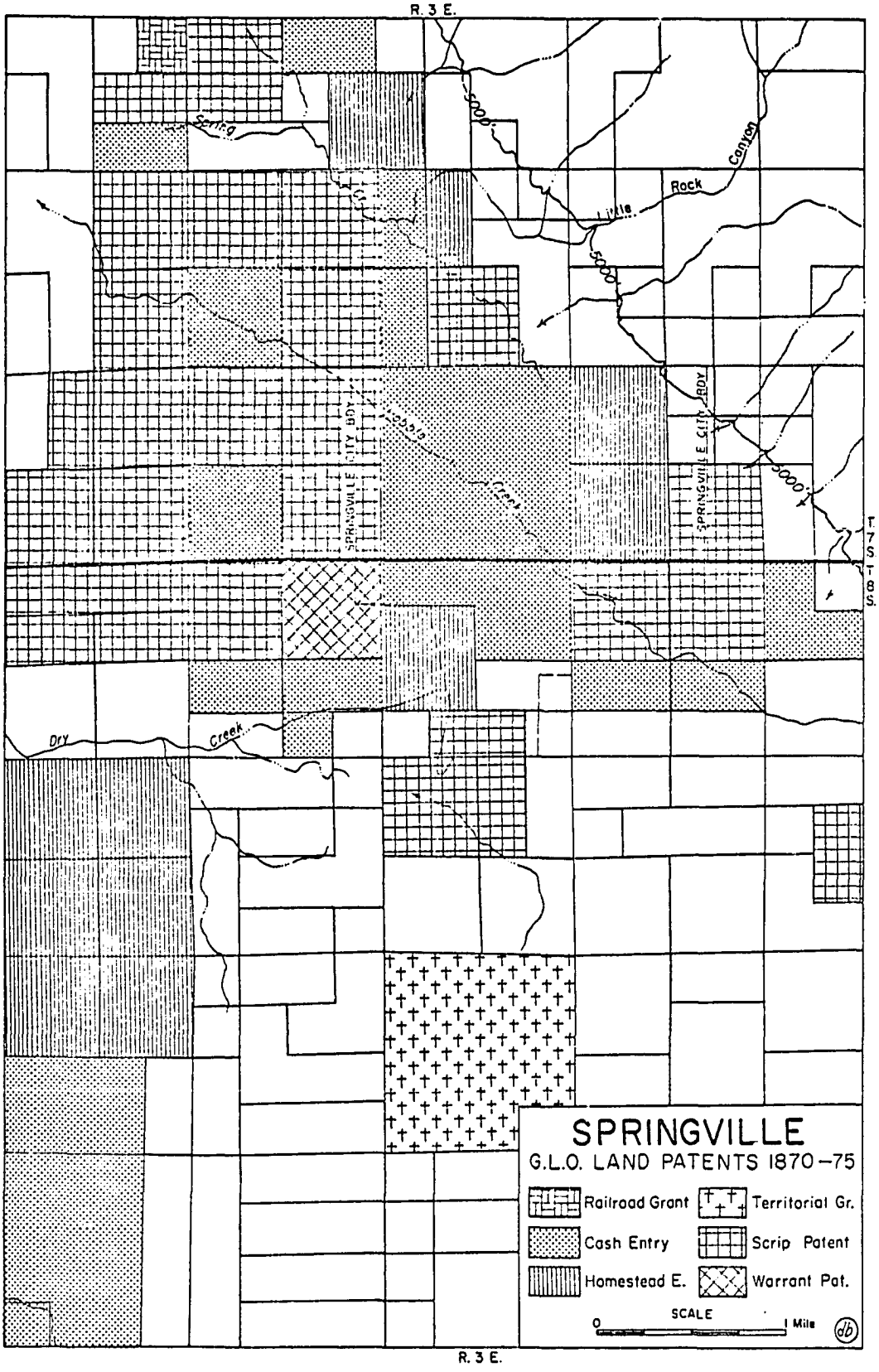
Clearly the decade of the 70's witnessed the virtual elimination of the small 1-15 acre farm and a substantial reduction in the number of moderately sized farms in the 15 to 40 acre class. Small farms were no doubt affected adversely by the depression of the early 70's. These marginal operations could not withstand the economic squeeze in which they were caught. This was also the period when farmers of Springville were obtaining legal title to their land which may have also contributed to the larger farm size, since 160 acres was the basic unit for government land alienation, although it was possible to gain title to smaller acreages.

Government Land Patents

Figure XXXI. shows the distribution of Government Land Patents which were finalized between 1870 and 1875. It is readily apparent that the first land to be patented was in the immediate vicinity of Springville, which is the land that was occupied and irrigated first, while the land toward the southeast, which was upstream but still on the plains, was not acquired until later. It is also evident from the map that the 5,000 foot contour line marked a rather distinct upper boundary for acquisition of private land.

Unlike Brigham City and Kaysville, the majority of the first land titles in Springville were not acquired by cash entries. Scrip patents were the most numerous accounting for 41% of the total, while cash entries accounted for 31% and homesteads 19%. The greater abundance of scrip patents in Springville probably reflects the higher percentage of residents born in the eastern United States. Many of these individuals apparently

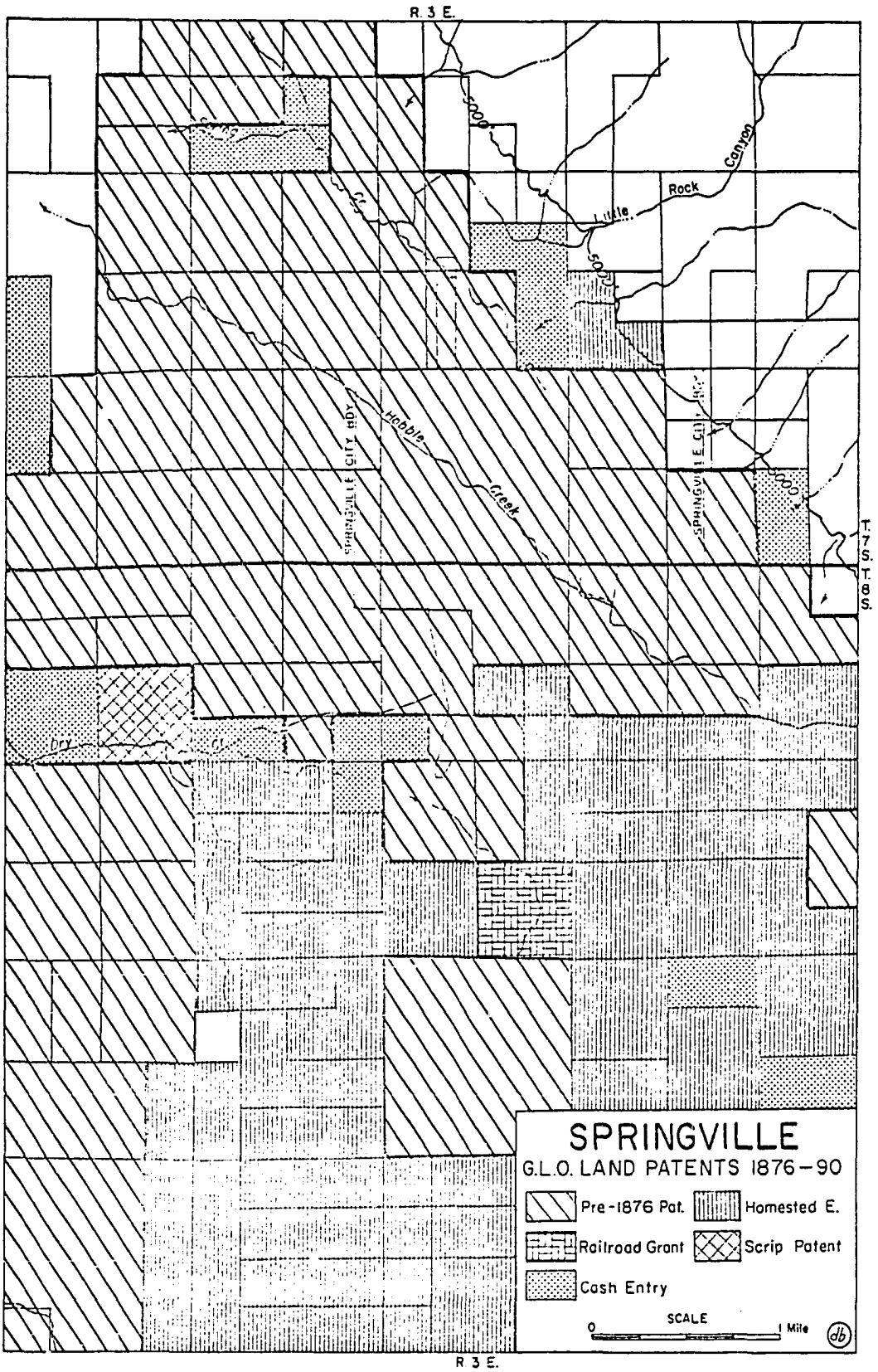
Figure XXXI


R. 3 E.
Spring
Rock
Canyon
Little
Creek
Dry
Creek
SPRINGVILLE CITY BDY
T. 7 S.
T. 8 S.
SPRINGVILLE
G.L.O. LAND PATENTS 1870–75
Railroad Grant
Territorial Gr.
Cash Entry
Scrip Patent
Homestead E.
Warrant Pat.
SCALE
0
1 Mile
db
R. 3 E.

obtained land scripts from their home states before moving to Utah. In Brigham City, cash entries accounted for most of the farm land acquired during the first five year period contrasted with only 31% in Springville and nearly a third of this was included in the 1872 township grant. Homesteads were relatively rare in Springville, accounting for only 19% of the total but this was higher than either Brigham City or Springville.

A look at Figure XXXII showing Government Land Patents from 1876-1890 identifies other significant patterns. As with Brigham City and Kaysville, the larger portion of the land was acquired during the first five year period. This land lay mostly along the drainage of Hobble Creek, where the first settlers established themselves, while the higher plains to the southeast were acquired slightly later. The 5,000 foot contour remained a rather pronounced boundary between private and public lands. Seventy-seven percent of the land acquired after 1875 was patented as homesteads. Most of this land was filed before 1875 but patents were not granted until the latter half of the decade. Homesteads played a very minor role in Brigham City, and were only of moderate importance in Kaysville, but in Springville they accounted for more land titles than any other type of patent. The reason for this pattern is not readily apparent. It may be that the Springville area was harder hit by the economic depression of the early 70's than its counterparts to the north, thereby reducing the availability of cash for land purchases. The pronounced decrease in the number of farmers during that decade would offer some support for this hypothesis. Brigham City, on the other hand, was largely unaffected by the depression because of the successful cooperative system which used its own script for trading purposes and there may have been more cash available than in Springville for land purchase.

Figure XXXII



Persistence

The degree of persistence in Springville exhibited the same basic patterns that occurred in Kaysville and Brigham City. Names from the 1853 Bishop's Report were compared with the names on the U. S. Agricultural Schedules for the years 1860, 1870 and 1880. The recurrence of the same names and same surnames are summarized in Table XXXIX. Only 28 out of 131 heads of families in 1853 appeared on the 1860 agricultural census schedule. There were 16 additional farmers who had the same surnames in 1860 and 22 in 1870 indicating probable kinship. The total surnames (44 in 1860 and 53 in 1870) accounted for 35.48% of the farm population in 1860 and 37.06% in 1870. This means that approximately 65% of the farmers in 1860 and 63% of those in 1870 had arrived in Springville after 1853. Thirty-one of the farmers listed in 1870 were included on the 1853 Bishop's Report, indicating that approximately one-fourth of these families had remained for the 17 year period. Three more of the 1853 families appeared in 1870 than in 1860. Evidently they were either missed by the 1860 census taker or had moved away temporarily.

The rapid decline of farmers during the decade of the 70's took its toll among the long time rural residents of Springville, The number of same names from 1853 had dropped to 10 by 1880. The greatest persistence occurred during the decade of the 60's. Thirty-eight (30.65%) of the farmers in 1860 recurred in the 1870 schedules, and an additional 33 farmers with the same surnames amounting to a total of 71 recurred on the 1870 record, accounting for 49.65% of the 1870 population. This still meant, however, that half of the farmers in 1870 were new to Springville during the preceding decade.

This pattern of turnover in rural population continued during the

Table XXXIX

RECURRENCE OF SAME NAMES AND SAME SURNAMES
AMONG FARMERS OF SPRINGVILLE

Years	Same Name	Percent	Additional Farmers with Same Surname	Total Surnames	% of farmers represented by surnames on previous census
1853-1860	28	21.37	16	44	35.48
1853-1870	31	23.66	22	53	37.06
1853-1880	10	7.63	20	30	35.29
1860-1870	38	30.65	33	71	49.65
1860-1880	9	7.26	27	37	43.53
1870-1880	28	19.58	23	51	60.00

Heads of Families in 1853. . . .131

Number of Farmers in 1860. . . .124

Number of Farmers in 1870. . . .143

Number of Farmers in 1880. . . . 85

1853 Bishop's Report.

Manuscript U. S. agricultural census schedules.

decade of the 70's, when the total number of farmers declined from 143 to 85. Only 28 of the 143 farmers reappeared on the 1880 schedules. However, there were an additional 23 families with the same surnames indicating kinship to the 1870 families. Thus in 1880, 51 of the 85 families had the same surnames as in 1870, but during this decade of decline in total farm population, there was still a 40% turnover in surnames, i.e. 40% of the farm families of 1880 were new to the community during the decade, even though the farm population was reduced by 42%. The general pattern of excessive turnover in rural population which was evident in both Brigham City and Kaysville, was also evident in Springville, and like these communities, it appears that if a farm family remained for one decade, they were apt to stay for several, but the majority of the farm population did not last for ten years.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Initial Settlement

Upon their arrival in the Salt Lake Valley in 1847 some of the pioneer company immediately set about plowing and sowing, while others were sent on exploring expeditions to reconnoiter the entire valley in order to determine the best site for establishing the major settlement. After the return of the exploring parties, a public meeting of the entire camp was held and a motion to locate the prime city at the site of their first encampment was sustained unanimously. Brigham Young had earlier met with the members of the Apostle's quorum and agreed on the location as well as a general plan for the city. But before the decision was finalized apparently he wanted the backing of the entire camp. The city was then platted into ten-acre blocks with eight lots to the block and wide streets running in cardinal directions. South of the city farm land was laid off in five, ten, and twenty-acre plats with the larger farms being the greatest distance from the city center. Most of the farm land was later enclosed within a common fence forming a "big field."

During the first winter of 1847-48, the High Council, which was left in charge of the new settlement when Brigham Young and the other Apostles returned to Winter Quarters, took stringent measures to keep settlers within the confines of the fort in order to prevent a general dispersion up and down the valley where settlers might be subject to Indian attack or diminished influence of the High Council. Apparently the only major exceptions to these restrictions were a few stockmen who were grazing herds of cattle at considerable distances from the Salt Lake settlement. With the coming of spring in 1848 and the return of Young and other

Church leaders to the community and the addition of several hundred newcomers, settlers were no longer restricted to Salt Lake City. Church authorities arranged for the purchase of Miles Goodyear's claim on the Weber River and a new community was founded at what is now Ogden. In Davis County, Perrigrine Sessions and Hector Haight, who had herded cattle through the winter of 1847-48, established permanent homes in what was to become Bountiful and Farmington. They were soon joined by other settlers, developing a dispersed pattern of farmsteads along the lower lake plain. By 1850, settlers had established themselves as far north as Brigham City. New settlements were also founded south of Salt Lake along the Jordan River and some of its tributaries to the east.

In Utah Valley the situation was somewhat different. Here the greater densities of Indian population retarded Mormon settlement for two years. Consequently, when settlement did occur it was more organized. In the spring of 1849 an organized colonizing party consisting of about thirty families under the direction of John S. Higbee went to the Provo River and established Fort Utah at the present site of Provo.[1] Relationships with the Indian inhabitants of the valley were often strained during the first year and finally erupted in open warfare in February of 1850. Troops were sent from Salt Lake City to aid in the struggle resulting in the defeat of the Indians, making the Utah Valley Crescent safe for white settlement; eight new communities were established in the fall of that year. Additional settlements were established at periodic intervals far to the south of Wasatch Oasis in order to develop a "Mormon

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[1]J. Marinus Jensen, History of Provo, Utah (Provo, Utah: New Century Printing Co., 1924), pp. 33-34.

corridor" to the California coast which could serve as an alternate route for future immigration of Mormon converts to the Salt Lake Valley. Consequently, the first settlers in Utah Valley came primarily in organized companies. The usual sequence of events was first exploration of the area by a small party which then reported back to Church officials on the desirability of a particular site, at which time a "call" was issued for settlers to move to that locality. A leader was appointed to organize a colonizing company, which then established the new settlement.

Fortifications

Where Indian dangers seemed most likely, a fort was constructed within a few weeks or at most a few months after the first settlers arrived, producing an initial nucleated pattern of settlement that persisted for many decades. On the other hand, dispersed farmsteads were common in areas where perceived Indian dangers were minimal--particularly in Salt Lake and Davis counties. At the time of the Walker War of 1853-54, a general alarm was sounded throughout the occupied areas and all settlements were ordered to build forts or construct walls around their cities. The fortification building era lasted for two years during which time virtually every settlement constructed an earthen wall around the village itself or around a central fort that would give protection for farmers within the vicinity in the event of an Indian attack. Prior to the construction of the fortification, a town plat was usually surveyed and the residents of the community took up lots within the new plat. Perhaps the most lasting imprint of the wall building era was the accentuation of village settlements versus dispersed farmsteads. Villages offered a number of economic and social advantages, as well as defense, to these early Mormon colonists and were preferred by the Church hierarchy. Even in areas

where dispersed settlement persisted, as in Kaysville, the construction of a wall around a newly surveyed town plat led to the development of an urban nucleus that served as the focal point of the community.

Spacing of Settlements

A nearest neighbor analysis of settlements founded by 1850 and repeated for 1890 demonstrated that settlements were distributed in a fairly uniform pattern throughout the Mormon Core area and that the distances between villages or hamlets were small. The average distance between communities in 1850 was 2.8 miles. At this early date many settlements did not represent true villages or even hamlets, but they soon developed a small nucleus with a school, church and a few businesses. The relatively uniform distribution of villages and hamlets cannot be explained in terms of stream distribution nor by any general settlement plan conceived by Church authorities. Rather, it resulted from the aggregate choices of many individuals acting on their own initiative. Settlements were not located far from streams but irrigation canals allowed water to be brought several miles to communities not located by the river itself. Furthermore, water was sometimes available from springs, wells or intermittent streams to use for culinary purposes and limited irrigation. There is some indication in early records that Brigham Young planned to locate towns at ten mile intervals along the front, but there is no indication that such a plan was ever implemented. A closeup look at three selected communities in the Mormon Core area--Brigham City, Kaysville, and Springville--revealed that in none of these three settlements was the site selected by Young or any other General Authority as part of an over-all colonizing plan. The sites for the settlements were chosen by the first settlers themselves, and their major concern was level land that could be irrigated.

Two of the settlements--Brigham City and Kaysville--were later moved eastward to higher ground while Springville remained on the site originally chosen by its first inhabitants. The uniform spacing of settlements at frequent intervals apparently resulted from distance factors at a time when communication was restricted to travel by foot, ox cart, wagon, or horseback. Where dispersed farmsteads predominated there was a genuine need for central places at frequent intervals to facilitate the exchange of goods and services. In those areas such as Utah Valley, where agricultural villages were the rule, travel distance was still the major factor in the uniform spacing of settlements. Here the daily commuting of villagers to their farms was the limiting factor rather than communication from farm to village. The net effect, however, was the same--a closely spaced uniform pattern of farm communities throughout the Mormon Core area.

A second nearest neighbor analysis in 1890, after forty years of development, demonstrated that the consistent uniform distribution remained. The corridor arrangement of settlements, which Whebell found to be the rule in southern Ontario, was clearly evident in the Mormon Core area with its physical barriers of mountains and lakes to the east and west. Yet within that corridor, a uniform pattern of settlements developed somewhat analogous to Christaller's theoretical hexagonal arrangement. By 1890 a hierarchy of settlement size was also evident. While the size classification of Core communities used in the present study was arbitrary and not designed to test the validity of Christaller's thesis, its adaptation to Christaller's theoretical pattern fits remarkably well. The radial distance from each hamlet, village, town and city from its nearest neighbor of equal rank was essentially uniform and

matched closely the expected distances predicted by Christaller's theory. Furthermore, when an overlay of the hypothetical Christaller pattern drawn at an equivalent scale was placed over the 1890 map of settlements, the similarity between the theoretical pattern and the actual one was even more apparent. The spatial pattern of central places was not negated by the corridor arrangement of these settlements nor their dependence upon streams for irrigation. It appears, however, that the linear pattern of Core settlements did tend to stretch the distance between higher order communities beyond the predicted values.

Central Place Functions

The development of a hierarchy in settlement size implies a similar hierarchy in central place functions. Cities should have a greater amount and variety of establishments carrying on manufacturing and offering goods and services than do towns. Similarly, the urban functions in towns should exceed the number in villages and those in villages exceed the number in hamlets. Business directories published in the 1884 and 1888 editions of Sloan's Utah Gazetteer listing businesses and professional services in each community, offered an opportunity to identify such a hierarchy of urban functions. An attempt to use key services, e.g. banking, lawyers, and doctors, as an index to gauge the degree of specialized services available in the higher order communities proved unsuccessful. Banks were virtually absent except in the three largest cities and Corinne, while the presence or absence of doctors and lawyers in other communities was so sporadic that it bore little relationship to community size or the number of other businesses in the community. On the other hand, general stores and/or cooperative mercantile establishments were ubiquitous to all settlements except the smallest hamlets. A linear

correlation analysis between the number of such establishments and the number of inhabitants in each community in 1888 produced an R value of .801555, while a similar correlation between the population and total number of businesses listed in the directory in 1884 and 1888 produced R values of .65138 and .72066 respectively. Clearly a hierarchy of urban functions did occur with increasing population size.

Rank Size Rule

The development of a pyramidal structure of settlement size along the Wasatch Front, i.e. a decreasing number of settlements in each higher rank category, suggested a correlation of Core settlements to Zipf's rank/size rule. The population of Core settlements were plotted on a semi-log graph for the four census years included within the present study along with 1920 for comparison over a longer time span. The graph revealed a consistent pattern of primacy throughout the first 60 years of settlement, with the ratio of population size among the first three settlements being approximately one-third rather than one-half as predicted. Salt Lake City continued to dominate the region through the entire period. Similar studies or rank size in countries throughout the world have shown that primacy is a very common trait, particularly in countries that are not highly industrialized. Consequently, Salt Lake's dominant position was not extraordinary, but rather to be expected considering the status of economic development in the Core.

At the other end of the scale, the number of smaller hamlets dropped off rapidly--a significant deviation from the rank size prediction. However, studies done in India and China show that such a pattern among small rural hamlets is the rule rather than the exception. Again Utah's pattern conformed to findings elsewhere in the world. The size distribution in

between the larger cities and the smallest hamlets conformed fairly closely to Zipf's theoretical pattern. Yet the gradual development of an identifiable curve in the line demonstrated that villages and larger hamlets were growing proportionately faster than towns.

Population Growth

The expansion of Mormon population in the Territory of Utah was phenomenal. Approximately 1,800 immigrants arrived in the territory during the first year--1847. The following year this number was increased to 2,600 and it remained high throughout the first decade with the greatest number, 5,300, arriving in 1852. Added to the growth through migration was the high rate of natural increase. The birth rate probably varied between 47 and 50 per thousand while the death rate was around 17 to 20 per thousand, resulting in a natural increase of births over deaths of approximately 2.9% annually. Thus, by the end of the first decade in 1856, the population of the Territory of Utah was approximately 36,000--40,000 less than enumerated in the territorial census. Mormon estimates of the alleged population were generally inflated to make a stronger case for statehood. In 1857 immigration to Utah was drastically reduced because of hostilities between Utah and the federal government and by 1858 had practically ceased. It was soon revived, however, and the number of Mormons migrating to Utah increased to over 2,000 in 1860 and exceeded 5,000 by 1862. Substantial immigration to Utah continued throughout the decade of the 60's although it fluctuated from year to year. By 1869 when the transcontinental railroad was completed Utah's population was approximately 93,000. After the completion of the railroad there were no organized wagon trains crossing the plains and records were not maintained of those arriving in the territory, since each family arranged its

own passage on the railroad. The backlog of those waiting to come had dissipated by this time and the focus of Church officials was on domestic affairs in Utah resulting in a steady decline in the rate of Mormon migration.

The bulk of the incoming immigrants to Utah Territory settled first in the Mormon Core region. In 1850, 91% of the territorial population was located in the five counties along the Wasatch Front, but as one would expect this percentage decreased over the next four decades as colonization to outlying areas resulted in a more rapid growth rate on the frontier than in the Core. The lowest percentage of population in the Core occurred in 1880 when approximately 52% of the territorial population lived along the Wasatch Front. By 1890 the trend was reversed as growth in the Core exceeded that of the frontier and these five counties accounted for 58% of the territorial population.

Patterns of Growth in the Core

During the decade of the 50's, there was a distinct regional pattern of expansion as growth in Utah County far exceeded that to the north of Salt Lake City. Several factors contributed to the rapid expansion in Utah Valley: First, Church leaders wanted to establish a chain of settlements southward to connect Salt Lake City with the Pacific Coast. This "Mormon Corridor" was viewed as a possible route to immigrants from abroad. Second, Brigham Young had a negative perception of climates to the north and did little to encourage northern settlements in the early period. Third, there was a disastrous winter kill of livestock in the northern settlements in the winter of 1855-56. And finally, the Utah War of 1857-58 led to the abandonment of all the northern settlements temporarily and the movement of thousands of settlers to Utah Valley and more

distant points south; although this was a temporary move, a number of these northern settlers took up permanent residence in communities to the south further inflating the already rapid growth of Utah County. Since many of the temporary residents of Utah County returned to their homes in northern counties in 1858-59, they left numerous vacant buildings, as is indicated in the 1860 census which shows that 28% of the dwellings in Utah County were unoccupied compared with 7% for the northern counties.

The pattern of growth during the decade of the 60's was reversed with the northern communities increasing more rapidly in size and number than those in Utah Valley. The reorientation of expansion to the north seems to have been primarily the result of the completion of the transcontinental railroad passing around the north end of the Great Salt Lake with Ogden serving as the junction city. The railroad was completed in 1869 and a year later a branch line was constructed to Salt Lake City. With communication now focused to the north, it was Utah Valley that was left in the backwater of the major communication network. Furthermore, by 1869 the better lands in Utah Valley were occupied, while northern settlements continued to grow in number and in size through the next two decades.

Population Composition

The general composition of the population in the Mormon Core area differed significantly from that of other frontier areas in Western America. The population of the Core was about evenly divided between the sexes with males holding a slight edge in some communities and females in others, which contrasted sharply with the Gentile city of Corinne where males comprised 65% of the population. Among Mormon communities

there was very slight variation from settlement to settlement.

As with most migrations, it was largely young people that immigrated to Utah, resulting in a high percentage of the adult population within the child bearing ages. The large number of young adults, combined with the stress Mormonism placed on large families and polygamous marriages produced an exceptionally high birthrate and an age structure that was dominated by children. The 1855 Bishop's Report showed that approximately one-third of the population was under 8 years of age and in one community--Box Elder--46% were included in this age group. The average age of the population in 12 selected Core communities in 1860 was 20, and had only increased to 23 by 1880. During the same period the percentage of the population under 15 years of age dropped from 52% to 46%. The high proportion of children assured a continual high growth rate as these young people reached the child bearing ages. It also meant that the provision of adequate food, shelter and clothing as well as schooling must have taxed the abilities of the small working population.

Nativity

A large proportion of Mormon converts migrating to Utah were Europeans from the United Kingdom of Great Britain and from Scandinavia. A detailed look at population census schedules for twelve selected Core communities in 1870 identified several significant generalizations. The mean percentage of the population born in the United States for these twelve communities was 63.6%. It varied from a low of 57.2% in Alpine City to a high of 76.8% in Farmington. These data could be misleading, however, since the majority of that population in every case was born in Utah meaning that the bulk of those born as U. S. citizens were children. Clearly the majority of the adult population consisted of foreign born.

According to the 1880 census, while the foreign born comprised only 30% of the total population in the Territory of Utah, they constituted 57% of those over 20 years of age and 68% of those over 30 years of age.

The bulk of foreign born came from the British Isles. On the average they comprised about three-fourths of the foreign born in Mormon communities. In Bountiful and Ogden, over 90% of foreign population were drawn from the British Isles, while in Brigham City they comprised only 36%. In most Mormon Core communities those born in the British Isles probably comprised close to half of the adult population. The major exception to this rule was Brigham City where Scandinavians comprised nearly 60% of the foreign born, compared with 36% for the British Isles. Apparently the early settlement in Brigham City of significant numbers of Scandinavians acted as a magnet to attract later Scandinavian immigrants to the same area. In addition to the attraction of relatives or friends there was the advantage of a common language and culture, whereas, in other communities, language acted as a barrier to acculturation. The British Isles and Scandinavia combined, accounted for approximately 88% of the foreign born in the Core area, and while Scandinavians were concentrated in Brigham City, some Scandinavians were found in virtually every Core settlement.

Over the 20 year period, 1860-1880, the rate of growth by immigration almost kept pace with the high rate of natural increase. The foreign born comprised 32% of the population in 1860, 34% in 1870 and 29% in 1880, while the percentage of the U. S. population born outside of Utah dropped steadily from 31% in 1860 to 15% in 1880. Clearly the Utah immigrants were coming primarily from Europe rather than the Eastern United States. During the same period the proportion of the foreign born

coming from Scandinavia increased from 11% in 1860 to 19% in 1880, while the percentage from the British Isles declined from 81% to 67%.

Occupations

An analysis of the occupations listed in the manuscript census schedules, both reveals and obscures important facts regarding Utah's economic structure. For the 1870 census, enumerators were instructed to include the occupation of any person boy or girl whatever the age, if they were earning money regularly by labor contributing to the family support or appreciably assisting in mechanics or agricultural industry.[1] However, only one occupation was listed for each person, which obscured the fact that many artisans, mechanics or professional people also owned a small farm within or near the village. Thus, they may have been listed in the census as school teachers or carpenters, but in reality they were also farmers. The census obscures this relatively strong tie to the land where people had dual occupations, and there is no way of measuring the extent of these dual roles.

At the same time the census reveals the variety of occupations that existed in these early communities. On the average only about 44% of the working population listed agricultural pursuits as their occupation in 1870, while tertiary activities accounted for 40% and secondary activities 15%. The high proportion of children was reflected in the low percentage of the population listing an occupation--26%. This was a much lower percentage than that of surrounding states where the ratio of population listing occupations varied from a high of 72% in Idaho to a low of 32% in New Mexico. Table XIV reveals an interesting regional pattern

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[1]Wright and Hunt, History of the U.S. Census, p. 159.

of agricultural employment. Excluding the Gentile city of Corinne, those communities north of Salt Lake had a higher percentage of people employed in agriculture than those in Utah Valley, yet the mean percentage of those listed as farmers in Utah Valley was higher than that in the northern settlements--39% compared with 22.25%. At the same time, farm laborers in the northern settlements averaged 29.25% compared with only .97% in Utah County. Apparently the reason for this regional difference stems from the nature of the settlements themselves. To the north of Salt Lake City the first settlers moved in individually rather than in organized colonizing companies. Consequently, they frequently established themselves on dispersed farmsteads rather than in villages. In contrast, Utah Valley, which was settled later because of greater danger from Indians, was settled by organized groups in agricultural villages. Since the population was restricted primarily to the village, there was greater opportunity for secondary and tertiary occupations in the exchange of goods and services. Furthermore, common laborers who spent only part of their time working in agricultural pursuits and the rest doing odd jobs in the village were more apt to list their occupation as laborer rather than farm laborer.

Table XV shows that over the 20 year period, 1860-1880, the percentage of people listing an occupation climbed from 19% to 28% as the average age increased. The percentage employed in primary occupations dropped from 58% in 1860 to 44% in 1870 but climbed again to 48% in 1880. The greatest increase in primary occupations in the 70's took place in Utah Valley, where the number of farmers as well as the amount of agricultural land increased significantly. This expansion of agriculture resulted from additional lands being brought under irrigation because of the

stimulus of mining, which created a greater demand for agricultural products in nearby mining camps and in neighboring states.

Acquisition of Land

U. S. public land policies were not extended to the Territory of Utah until 1869 when a Government Land Office was established in Salt Lake City, which meant that all land transactions prior to that date were not officially recognized by the U. S. Government and no legal land titles had been granted. In effect the Mormons were squatters on the public lands. While this could hardly be considered an advantage, it had allowed the Mormons to develop their own land system. In the beginning land was surveyed and granted to individuals in Salt Lake City under the auspices of Church officials without any civil machinery to give it legality, but when the provisional government of the State of Deseret was organized a surveyor-general was appointed to take over the responsibility of recording land transactions. After a new settlement had been established, the surveyor-general from Salt Lake City, or some other qualified surveyor, came to the settlement and surveyed the land, which allowed the owner to then have his claim recorded by the county recorder. The county deed records are very incomplete for this early period and none of the first plats in Box Elder, Weber, Davis or Utah counties are still in existence. There are a few scattered plats of farm land in Salt Lake County in the Pioneer Plat Book in Salt Lake County but they are very incomplete.

Farm size seemed to vary with communities. The first farms at Box Elder ranged from 40 to 80 acres in size while those at Springville were 20 to 40 acres. After the initial surveys of 1851 and 1852, farm sizes generally decreased reaching their smallest size at about 1860. The construction of forts or city walls at each settlement in 1853-54 produced a

surge of new land surveys as the towns were laid out and walls constructed. The usual practice for larger villages was to survey an area of farm land adjacent to the village which was enclosed within a common fence. These were frequently called Big Fields. The Big Fields in turn were surveyed into a number of small farms that varied in size from village to village and in fact often varied within the Big Field itself--the most common farm size being 10 to 15 acres. Each settler usually owned a lot within the village as well as a small farm in the Big Field, and sometimes additional parcels of land in other nearby surveys of farm or meadow land. Not all farmers lived in the villages. In Kaysville, most of the farmers remained dispersed on isolated farmsteads and did not move into the fort. Here farms were larger and were surveyed individually rather than as part of one general plat of farming lands. There was a Big Field at Kaysville, but it enclosed only a small portion of the cultivated land.

The pattern of small farms in the Mormon Core area resulted from several contributing factors. (1) Church authorities advocated small farms in order to accommodate a steady flow of new settlers. (2) Village settlement itself contributed to small farms which allowed village dwellers relatively easy access to their farms with many small farms near the village rather than larger farms at greater distances. (3) The cost of construction of fences and irrigation canals were prohibitive for individual farmers if they attempted to farm large tracts of land, which was also an incentive to enclose the farmlands within one big field constructed and maintained by communal efforts.

After 1860 farm size began to increase in spite of sermons by Church authorities advocating small farms that could be intensively tilled and adequately cared for. Springville serves as an excellent example. The

average size farm in 1860 according to the agricultural census schedules, was 20.39 acres. This increased to 25.58 acres in 1870 and 62.56 acres in 1880. In 1860, 88% of the farms were under 40 acres in size, 80% in 1870, and only 39% in 1880. The tiny farms of 1860 were not economically viable.

Government Land Patents

Because of the disastrous losses of property in Missouri and Illinois previously experienced by Utah settlers, they were keenly aware of the tenuous nature of their land titles in Utah. There was great concern that land jumpers might once again evict them from their lands through manipulation of land titles. They were anxious, therefore, to gain legal title to their land as rapidly as possible, creating a virtual rush at the Government Land Office when it was finally established in Salt Lake City in 1869. The first land patents granted in Brigham City, Kaysville and Springville--the three communities selected for more detailed study--were in 1870. Several generalizations concerning the patterns and methods of acquiring government land patents are evident in these three communities. (1) The bulk of the public lands passing into private hands did so during the first five year period after the establishment of the Government Land Office. More land was alienated during the first five years than during the succeeding fifteen year period. (2) The oldest areas which had been occupied the longest were acquired first--mostly by cash entries, warrant or script patents--apparently a reflection of the keen interest of Utah residents in securing immediate title to their lands. (3) After the first five year period, land was acquired primarily by homesteads. (4) Consequently, homestead land tended to be more remote from the village center and often included higher lands that were brought under irrigation at a

later period, or poorer land that was avoided by the first settlers. (5) There were important regional differences in the pattern of homestead entries. In Brigham City, homesteads were virtually absent during the first five year period and of only minor significance over the next fifteen years. Homesteads were of moderate importance in Kaysville, but in Springville they accounted for more land than any other type of patent. The above pattern may have been a reflection of the uneven impact of the depression years in the early 70's. In Brigham City their cooperative economic enterprises left them virtually unaffected by that depression. Cash entries accounted for a rather small percentage of land acquired in Springville but a very large percentage in Brigham City. If Utah Valley was harder hit by the depression there would be less available cash to purchase land, and homesteads were the alternative. Some support for this hypothesis is also offered by the reduced number of farmers in Springville during that decade. There was nearly a 50% reduction in the number of farmers in Springville between 1870 and 1880 while the number of farmers in both Kaysville and Brigham City increased during that decade.

Persistence

One of the remarkable features about Mormon settlement in the Core region was the lack of persistence among rural dwellers. Less than a third of the names listed on agricultural census schedules recurred on the schedules a decade later, i.e. more than two-thirds of the farmers in each community were no longer farming in that community 10 years later. The recurrence of family surnames on later censuses was much more common but usually less than 50%. Therefore approximately 50% or more of the farmers were newcomers to each community each decade. The recurrence of surnames, however, did increase over a thirty year period

indicating that grown sons had become farmers in their own right. The evidence is also fairly strong that when farmers remained in the settlement for 10 years that they were apt to stay there permanently.

The high degree of mobility in the Mormon Core area seems to have resulted from both push and pull forces. Push forces included the shortage of irrigation water and overcrowding on the better agricultural lands as well as tiny uneconomic farms that produced serious underemployment. At the same time, pull forces were at work in newly established colonies outside the Core in Utah and neighboring territories where new settlers were promoting their own development by encouraging additional families to migrate to their region and strengthen their communities. Moreover, Church leaders were encouraging colonization to distant regions. All of which contributed to a high degree of social and spatial mobility in the Mormon Core area.

Diversity versus Uniformity

There were many elements of uniformity in the process of settlement along the Wasatch Front which are evident in this and other studies. Except for Corinne in the north, this region was settled by people who were virtually all of one faith. The solidarity of that faith had been greatly strengthened by the common experience of persecution from a hostile outside world and the sharing of the strenuous trek across the plains to the Salt Lake Valley. Mormonism placed great emphasis on loyalty and obedience to ecclesiastical authority. There was a common dependence on irrigation all along the front and it was essential that whole communities cooperate in the construction of irrigation canals and diversion dams. In virtually every community local ecclesiastical authorities also served as the civil authorities. In addition, the nearest neighbor analysis of

1850 and 1890 settlement patterns demonstrated that settlements were spaced rather uniformly throughout the region and that a hierarchy of settlement size developed somewhat akin to Christaller's central place theory even though the distance between the higher orders of towns was greater than expected perhaps because of the corridor nature of the front. Throughout the region small farms were dominant for the first twenty years. Furthermore, a breakdown of age and sex structure in Mormon communities showed that these settlements were consistently divided about equally between the sexes and that nearly half of the population was under 15 years of age.

Yet, in spite of these ubiquitous characteristics of Mormon settlements, the Core was far from being a monolithic culture. Diversity is a persistent theme throughout the present study. While it is true that the Wasatch Front was settled by people of one religious faith this fact should not obscure the diversity that existed. Most of these people were recent converts to Mormonism and had come from a variety of cultural and religious backgrounds. Furthermore, Mormonism operated with a lay ministry with no formal training in theology. Well over half of the adult population were foreign born coming primarily from Scandinavia and the British Isles, and they were distributed unequally in Core communities. Brigham City was a settlement of Scandinavians while Kaysville and Bountiful were overwhelmingly English in origin. Springville on the other hand was dominated by people born in the United States.

Not only did the population of the frontal communities vary in national and religious background, but also in occupational pursuits. Many of them were skilled tradesmen from industrial districts of Great Britain or urban communities in the Eastern United States while others

were from rural backgrounds and still others had professional training in law, medicine or education. Not only did Utah residents come from a varied economic background, but they were distributed unevenly in these core communities as well. A study of the occupational structure (see Table XII) shows that there was considerable variation. A definite regional pattern shows up which is discussed in Chapter IV. The northern communities had a much higher percentage of their labor force engaged in agriculture than those in Utah Valley. The agricultural occupation itself shows considerable diversity. Northern communities had a high percentage of people employed as farm laborers while in Utah County there were very few in this category. The method of settlement in Utah Valley differed markedly from that to the north of Salt Lake City. The first settlements in Davis County were established by individuals who were looking for grazing lands for their stock, and who later turned to farming. They seemed to be acting on their own rather than in response to any Church direction, while the first settlements in Utah Valley were settled by groups. Dispersed farmsteads were common in Davis and Weber Counties, while nucleated village settlements were the pattern in Utah County. A survey of journals and diaries checking the reason people moved from one locality to another demonstrated that throughout the Wasatch Front there was a great deal of social mobility and an overwhelming percentage of this movement resulted from personal choice rather than from direction from any Church authority. The study of names on the census records for the three selected communities--Brigham City, Kaysville, and Springville--revealed a very high rate of turnover in all of these communities throughout the entire colonization period. With each succeeding census half of the rural population was comprised of new families whose surnames had not been on the previous census. Such a high

rate of turnover certainly would produce a great deal of diversity within the community and from community to community.

A recognition of diversity and the role of individualism in Mormon settlement is essential if one is to gain a clear understanding of the settlement process. While there was much that was similar in Mormon communities and many social and cultural characteristics in which they all shared, those similarities should not obscure the differences and variety that also characterized the process of settlement in the Mormon Core area.

Appendix I

RADIAL DISTANCES MEASURED BETWEEN SETTLEMENTS OF THE SAME RANK

Hamlets

$\overline{X}$ = 3.5 miles

X	$(\overline{X} - X)^2$
6.0	6.25
6.0	6.25
6.0	6.25
7.3	14.44
7.0	12.25
7.0	12.25
2.0	2.25
2.0	2.25
4.5	1.00
4.0	.25
4.0	.25
2.8	.49
1.9	2.56
1.9	2.56
4.8	1.69
5.0	2.25
3.5	0.00
3.5	0.00
3.5	0.00
3.2	.09
6.5	9.00
2.9	.36
2.0	2.25
2.3	1.44
1.5	4.00
1.0	6.25
1.0	6.25
2.3	1.44
2.0	2.25
2.3	1.44
2.0	2.25
2.8	.49
2.8	.49
2.0	2.25
2.0	2.25
7.9	19.36
4.8	1.69
3.9	.16
2.9	.36
2.9	.36
4.0	.25
4.0	.25
7.8	18.49
152.5	156.66

$$S_X^2 = \frac{156.66}{N-1} = \frac{156.66}{42}$$

$$= 3.73$$

$$S = 1.9313$$

RADIAL DISTANCES MEASURED BETWEEN SETTLEMENTS OF THE SAME RANK (Cont.)

Cities

$\bar{X}$ = 35.3 miles

X	$(\bar{X} - X)^2$
33.0	5.29
33.0	5.29
40.0	22.09
160.0	32.67

$S_x^2 = \frac{32.67}{2} = 16.335$

$S = 4.04$

SOURCES CONSULTED

Books

Anderson, Nels
Desert Saints, The Mormon Frontier in Utah. Chicago: University of Chicago Press, 1942.

Arrington, Leonard J.
Great Basin Kingdom, An Economic History of the Latter-Day Saints 1830-1890. Lincoln: University of Nebraska Press, 1966.

Bancroft, Hubert Howe
History of Utah. San Francisco: The History Company, 1890.

Berry, B. J. L.
Geography of Market Centers. Englewood Cliffs: Prentice Hall, Inc., 1967.

Billington, Ray Allen
The Frontier Thesis: Valid Interpretation of American History? New York: Holt Rinehart and Winston, 1966.

Blouet, Brian W.
"Section I: Concepts, in Theory and Practice." Man, Settlement and Urbanism. Edited by Peter J. Vcko, Ruth Tringham, and G. W. Dimbleby. London: Duckworth, 1972.

Brochett, L. P.
Our Western Empire. San Francisco: Prently Bettesan Co., 1882.

Broek, Jan O. M., and Webb, John W.
A Geography of Mankind. New York: McGraw Hill Book Company, 1968.

The Santa Clara Valley, California: A Study in Landscape Changes. Utrecht: Oostoek, 1932.

Burton, Richard F.
The City of the Saints. New York: Harper Brothers, 1862.

Bybee, Cora Bodily
History of Syracuse 1877-1965. Springville, Utah: Art City Publishing Company, 1965.

Carr, Annie Call
"Bountiful." East of Antelope Island. Daughters of Utah Pioneers: Davis County Company. Bountiful: Carr Printing Co., 1948.

Books (Continued)

Carter, Harold and Davies, W. K. D.
Urban Essays: Studies in Geography of Wales. London: Longman, 1970.

Chandless, William
A Visit to Salt Lake, Being a Journey Across the Plains and a Residence in the Mormon Settlements at Utah. London: Smith, Elder, and Co., 1857.

Chisholm, Michael
Rural Settlement and Land Use. Chicago: Aldine Publishing Company, 1970.

Christaller, Walter
Central Places in Southern Germany, translated by C. W. Baskin. Englewood Cliffs, New Jersey: Prentice Hall, 1966.

Clark, Colin
Population Growth and Land Use. New York: St. Martin's Press, 1967.

Clark, J. R., ed.
Messages of the First Presidency. Salt Lake City: Bookcraft Inc., 1965.

Cottam, Walter P.
Our Renewable Wild Lands - A Challenge. Salt Lake City, Utah: University of Utah Press, 1961.

Cowley, Mathias F.
Wilford Woodruff: History of His Life and Labors as Recorded in His Daily Journals. Salt Lake City: Bookcraft, 1964.

Creer, Leland H.
The Founding of an Empire: The Exploration, and Colonization of Utah, 1847-1856. Salt Lake City: Bookcraft, 1947.

Davies, Wayne K. D.
"Toward an Integrated Study of Central Places." Urban Essays: Studies in the Geography of Wales. Edited by Carter Harold and Davies S.K.D. London: Longman, 1970.

Espenshade, Edward B., Jr. ed.
Goode's World Atlas. Ninth Edition. Chicago: Rand McNally & Company, 1949.

Forsgren, Lydia
History of Box Elder County. Salt Lake City: Daughters of Utah Pioneers, 1937.

Books (Continued)

Haggett, Peter
Geography: A Modern Synthesis. New York: Harper & Row, 1972.

Hansen, Klaus
Quest for Empire. East Lansing, Michigan: Michigan State University Press, 1967.

Hareven, Tamara K., Edited
Anonymous Americans. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1971.

Hawks, H. Bowman, and Harline, Osmond L.
The Salt Lake Area Land of Contrasts. International Geographical Union. Salt Lake: Department of Geography, University of Utah. 1960.

Hill, Ivy Blood, ed.
William Blood Biography. Logan, Utah: J. P. Smith and Son, 1962.

Hinckley, Gordon B.
Truth Restored. Salt Lake City: Deseret News Press, 1947.

Hunter, Milton R.
Beneath Ben Lomond's Peak. Daughters of Utah Pioneers: Weber County Chapter. Salt Lake City: Deseret News Press, 1944.

Brigham Young the Colonizer. Salt Lake City: Deseret News Press, 1940.

James, George W.
Utah, The Land of Blossoming Valleys. Boston: The Page Co., 1922.

Jefferson, Mark
Peopling the Argentine Pampa. New York: American Geographical Society, Research Series No. 16, 1926.

Jensen, Andrew
"Clinton Ward." Encyclopedic History of the Church of Jesus Christ of Latter Day Saints. Salt Lake City, Utah: Deseret News Publishing Company, 1971.

Jensen, J. Marinus
History of Provo, Utah. Provo, Utah: New Century Printing Co., 1924.

Joerg, W. L. G., ed.
Pioneer Settlement. New York: American Geographical Society Special Publication No. 14, 1932.

Books (Continued)

Johnson, Don Carlos
A Brief History of Springville, Utah from its First Settlement. Springville, Utah: William F. Gibson, 1900.

Johnson, E. A. J.
The Organization of Space in Developing Countries. Cambridge: Harvard University Press, 1970.

Johnson, James H.
Urban Geography, An Introductory Analysis. New York: Pergamon Press, 1967.

Journal of Discourses, 26 Vols. The Church of Jesus Christ of Latter-Day Saints. London: F. D. and S. W. Richards,.1854-1886.

Larsen, Gustive O.
Prelude to the Kingdom. Francestown, New Hampshire: Marshall Jones Company, 1947.

Lemon, James T.
The Best Poor Man's Country; a Geographical Study of Early Southeastern Pennsylvania. Baltimore: Johns Hopkins Press, 1972.

Mackintosh, W. A. and Joerg, W. L. G., ed.
Canadian Frontiers of Settlement. 9 Vols. (Vol. 3 was never issued.), 1934-1940.

Mulder, William and Mortensen, A. Russell
Among the Mormons: Historic Accounts by Contemporary Observers. New York: Knopf, 1958.

Neff, Andrew L.
History of Utah. Salt Lake City: Deseret News Press, 1940.

Nelson, Lowrey
The Mormon Village: A Pattern and Technique of Land Settlement. Salt Lake City: University of Utah Press, 1952.

Peterson, Charles S.
Take Up Your Mission: Mormon Colonization Along the Little Colorado 1870-1900. Tucson, Arizona: University of Arizona Press, 1973.

Powell, John Wesley
Report on the Lands of the Arid Region of the United States. Cambridge: The Belknap Press of Harvard University Press, 1962.

Books (Continued)

Ricks, Joel E.
Forms and Methods of Early Mormon Settlements in Utah and Surrounding Regions, 1847-1877. Logan, Utah: Utah State University Press, Vol. 11, January, 1964.

Roberts, B. H.
A Comprehensive History of the Church. 6 Vols. Salt Lake City: Deseret News Press, 1930.

Sloan, Robert W., ed.
Utah Gazetteer and Directory of Logan, Ogden, Provo and Salt Lake Cities. Salt Lake City: Herald Printing and Publishing Co., 1884 and 1888.

Snow, Eliza R.
Biography and Family Record of Lorenzo Snow. Salt Lake City: Deseret News Press, 1884.

Stewart, Norman R.
Japanese Colonization in Eastern Paraguay. Washington D.C.: Office of Naval Research, Report No. 30, 1967.

Trewartha, Glen; Robinson, Arthur H.; and Hammond, Edwin H.
Elements of Geography. New York: McGraw Hill Book Company, 1967.

Tullidge, Edward W.
Tullidge's Histories, Vol. 2. Salt Lake City: Edward Tullidge, 1889.

Van Riper, Joseph
Man's Physical World. New York: McGraw Hill Book Company, 1971.

Wade, Richard C.
The Urban Frontier. Chicago, Illinois: The University of Chicago Press, 1959.

Wright, Carrol D. and Hunt, William C.
History and Growth of the United States Census. 1900. Washington, D.C.: U. S. Government Printing Office, 1900. Senate Doc. 1 and 4. 56th Congress.

Young, Levi Edgar
The Founding of Utah. New York: Charles Scribners Sons, 1923.

Zipf, George K.
Human Behavior and the Principle of Least Effort. Cambridge: Addison-Wesley Press, Inc., 1949.

Periodicals

Anderson, Bernice Gibbs
"The Gentile City of Corinne." Utah State Historical Quarterly. Vol. 9 (1941), 141.

Arrington, Leonard J.
"Cooperative Community in the North, Brigham City, Utah." Utah Historical Quarterly. Vol. 33 (Summer, 1965), 198-217.

History of Box Elder County. Daughters of Utah Pioneers of Box Elder camp, Brigham City, 1937.

"United Order of Northern Utah." Heartthrobs of the West. Vol. 1 (1935), 53-56.

Blood, Henry H.
"Early Settlement of Kaysville, Utah." Utah Historical Quarterly. Vol. 2 (January, 1929), 15.

Bowman, Isaiah.
The Pioneer Fringe. New York: American Geographical Society, Special Publication No. 13 and 14, 1931.

"The Scientific Study of Settlement." Geographical Review, Vol. 16 (Oct., 1926), 647-653.

Brightman, G. F.
"The Boundaries of Utah." Economic Geography. Vol. 16, 1940, 87-95.

Brush, John E.
"The Hierarchy of Central Places in Southwestern Wisconsin." Geographical Review. Vol. 43 (July, 1953), 381-402.

Bylund, Erik
"Theoretical Considerations Regarding the Distribution of Settlement in Inner North Sweden." Geografiska Annaler. Vol. 42 (1960), 225-231.

Cook, Kenneth L., et al.
"Some Cenozoic Structural Basins in the Great Salt Lake Area, Utah; Indicated by Regional Gravity Surveys," Guidebook to the Geology of Utah, xx: The Great Salt Lake. Salt Lake City, Utah: Utah Geological Society, (1966).

Periodicals (Continued)

Curry, Leslie
"Random Spatial Economy: Exploration in Settlement Theory." Annals of the A.A.G. Vol. 54 (March, 1969) 138-146.

Dacy, M. F.
"The Spacing of Rural Towns," Annals of the A.A.G. Vol. 50 (1960), 59-61.

Dutton, C. E.
"Irrigable Lands of the Sevier River." Report on the Lands of the Arid Regions of the United States by John Wesley Powell. Cambridge, Massachusetts: The Belknap Press of Harvard University, 1962.

Geddes, Joseph A.
Farm Versus Village Living in Utah. Plain City - Type "A" Village. Bulletins 249 and 269. Utah Agricultural Experiment Station: Utah State Agricultural College. Logan, Utah. 1934 and 1936.

Greer, Deon
Map Supplement 14, Annals of the A.A.G., Vol. 61 (March, 1971).

Eidt, Robert C.
"Japanese Agricultural Colonization: A New Attempt at Land Opening in Argentine." Economic Geography, Vol. 44 (January, 1968), 1-20.

Frontier Guardian. "General Epistles from the First Presidency." Vols. 1 and 2. 1849 and 1850.

Hall, Robert B.
"Some Rural Settlement Farms in Japan." Geographical Review. Vol. 21 (1931), 93-123.

Hudson, John C.
"A Location Theory for Rural Settlement." Annals of the A.A.G. Vol. 59 (June, 1969) 365-381.

Ivins, Stanley S.
"Notes on Mormon Polygamy." Western Humanities Review, 1956, 231.

James, Preston E.
"The Blackstone Valley, a Study in Chorography in Southern New England." Annals of the A.A.G. Vol. 19 (1929), 67-109.

"The Expanding Settlements of Southern Brazil." Geographical Review. Vol. 30 (1940) 601-626.

Periodicals (Continued)

"Toward a Further Understanding of Regional Concept," Annals of the A.A.G., Vol. 2 (1952), 197.

Lattimore, Owen
"Chinese Colonization in Manchuria." Geographical Review. Vol. 22 (1932), 177-195.

Lyon, T. Edgar
"Mormon Colonization of the Far West," Improvement Era (July, 1970), 10-16.

Meinig, Donald
"The Mormon Culture Region." Annals of the A.A.G., Vol. 55 (June, 1965), 191-220.

Morrill, Richard L.
"The Development of Spatial Distributions of Towns in Sweden: An Historical-Predictive Approach." Annals of the A.A.G., Vol. 53 (March 1963), 1-14.

Morrison, Roger B.
"Predecessors of Great Salt Lake," Guidebook to the Geology of Utah, Vol. 20: The Great Salt Lake. Salt Lake City, Utah: Utah Geological Society (1966).

Platt, Robert S.
"A Detail of Regional Geography; Ellison Bay Community as an Industrial Organism." Annals of the A.A.G. Vol. 28 (1928), 81-126.

Scofield, Edna
"The Origin of Settlement Patterns in Rural New England." Geographical Review. Vol. 28 (1938), 652-663.

Seeman, A. L.
"Communities in the Salt Lake Basin." Economic Geography. Vol. 14 (1938), 300-308.

Stewart, C. T.
"The Size and Spacing of Cities." Geographical Review. Vol. 48 (April, 1958), 222-245.

Stone, Kirk H.
"Swedish Fringes of Settlement." Annals of the A.A.G. Vol. 52 (December, 1962), 373-393.

Periodicals (Continued)

Taylor, Griffith
"The Frontiers of Settlement in Australia. "Geographical Review. Vol. 16 (1926), 1-25.

"Sea to Sahara: Settlement Zones in Eastern Algeria." Geographical Review. Vol. 29 (1939),177-195.

"The Settlement of Tropical Australia," Geographical Review. Vol. 8 (1919), 84-115.

"Settlement Zones of the Sierra Nevada de Santa Marta, Colombia." Geographical Review. Vol. 21 (1931), 539-558.

Taylor, P. A. M. and Arrington, Leonard J.
"Religion and Planning in the Far West: The First Gēneration of Mormons in Utah," The Economic History Review. Vol. 11 (1958), 71-86.

Thompson, R. H.
"Distribution of Distance to the Nth Neighbor in a Population of Randomly Distributed Individuals." Ecology. Vol. 37. (1956), 394.

Thornthwaite, C. W.
"An Approach Toward a Rational Classification of Climate." Geological Review. Vol. 38 (January, 1948), 94.

Trewartha, Glen T.
"Types of Rural Settlement in Colonial America." Geographical Review. Vol. 36 (1946), 568-596.

Usher, Albert P.
"The History of Population and Settlement in Eurasia." Geographical Review. Vol. 20 (1930), 111-132.

Warkentin, John
"Mennonite Agricultural Settlements of Southern Manitoba." Geographical Review. Vol. 40 (1959), 342-368.

Whebell, C. F. J.
"Corridors: A Theory of Urban Systems." Annals of the A.A.G. Vol. 59 (March, 1969), 1-26.

Whittlesey, Derwent
"Sequent Occupance." Annals of the A.A.G. Vol. 19 (September, 1929), 162-165.

Periodicals (Continued)

Zink, Nora E.
"Dry-Farming Regions in Utah." Economic Geography. Vol. 15 (1939), 421-431.

Government Documents

"Acts, Resolutions and Memorials Passes at the Several Annual Sessions of the Legislative Assembly of the Territory of Utah." Great Salt Lake City: Joseph Cain, Public Printer, 1855.

"An Act Donating Public Lands to the Several States and Territories which may provide Colleges for the Benefit of Agriculture and Mechanic Arts." Thirty Seventh Session of Congress. (July 2, 1862), 503.

Box Elder County
Manuscript Deed Records, Books A and B, 1857. Box Elder County Recorder's Office. Brigham City, Utah.

Box Elder County
Tax Assessment Rolls, 1878. Box Elder County Tax Assessor's Office, Brigham City, Utah.

U. S. Bureau of Land Management
"Index to Township Plats, Township 9 North Range 2 West S. L. Meridian." Salt Lake City, Utah.

U. S. Census. Territory of Utah 1860-1870
Manuscript Agricultural Schedules. Microfilm. Weber State College, Ogden, Utah.

U. S. Census. Territory of Utah 1850-1880
Manuscript Population Schedules. Microfilm. Weber State College Library, Ogden, Utah.

U. S. Department of Agriculture
Soil Survey: Davis-Weber Area, Utah, 1968. Washington D.C.: Government Printing Office, 1968.

U. S. Department of Commerce
Bureau of the Census. Seventh-Eleventh Censuses of the United States. Agriculture. 1850-1890.

U. S. Department of Commerce
Bureau of the Census. Seventh-Eleventh Censuses of the United States, Mortality and Vital Statistics. 1850-1890.

Government Documents (Continued)

U. S. Department of Commerce
Weather Bureau. Climatological Summary Charts. Brigham City, Ogden, Salt Lake City, Provo, Brighton. 1965.

U. S. Government Land Office Deed, May 1, 1872
Microfilm copy on file at Bureau of Land Management, Salt Lake City, Utah.

Utah County Deed Records. Book A. 1851.

Manuscripts -- Ph.D. Dissertations and Masters' Theses

Baum, J. H.
"Geographical Characteristics of Early Mormon Settlement." Unpublished M.A. thesis, Brigham Young University, 1967.

Chestnutwood, C. M.
"An Historical Approach to the Urban Geograph of Brigham City." Unpublished M.A. thesis, University of Utah, 1950.

Coffman, W. E.
"The Geography of the Utah Valley Crescent." Unpublished Ph.D. dissertation, Ohio State University, 1944.

Cummings, Charles E.
"The Mormon System of Colonization." Unpublished M.A. thesis, University of Oklahoma, Norman, Oklahoma, 1946.

Dastrup, L.
"Mormon Colonization, a Type in the Westward Movement." Unpublished M.A. thesis, Brigham Young University, 1931.

Fox, F. Y.
"The Mormon Land System, A Study of the Settlement and Utilization of Land under the Direction of the Mormon Church." Unpublished Ph.D. dissertation, Northwestern University, 1932.

Francaviglia, R. V.
"The Mormon Landscape: Existence, Creation and Perception of a Unique Image of the American West." Unpublished Ph.D. dissertation, University of Oregon, 1970.

Hatch, Denton
"Brigham City United Order." Unpublished paper, Dec. 5, 1970. L.D.S. Church Archives, Salt Lake City.

Helbrock, Richard W.
"Nodal Settlement—Evolution in the Willamette Valley of Oregon, 1850-1900." Unpublished Ph.D. dissertation, University of Pittsburgh, 1973.

Manuscripts -- Ph.D. Dissertations and Masters' Theses (Continued)

Hodson, Dean R.
"The Origin of Non-Mormon Settlements in Utah: 1847-1896." Unpublished Ph.D. dissertation, Michigan State University, 1971.

Jackson, R.
"Myth and Reality: Environmental Perception of the Mormon Pioneers." Unpublished Ph.D. dissertation, Clark University, 1971.

Johnson, Paul T.
"An Analysis of the Spread of the Church of Jesus Christ of Latter-Day Saints from Salt Lake City, Utah, Utilizing a Diffusion Model." Unpublished Ph.D. dissertation, State University of Iowa, Eugene, 1966.

Laska, J. A., Jr.
"The Development of the Pattern of Retail Trade Centers in a Selected Area of Southwestern Iowa." Unpublished M.S. thesis, University of Chicago, 1958.

Leonard, Glen
"A History of Farmington, Utah to 1890." Unpublished M.A. thesis, University of Utah, 1966.

Miller, E. E.
"Agricultural Geography of Cache Valley, Utah-Idaho." Unpublished Ph.D. dissertation, University of Washington, 1951.

Monson, Raymond J., Jr.
"The Economic Plan of Mormon Colonization." Unpublished Master's thesis, Stanford University, 1954.

Nelson, R. E.
"The Role of Colonies in the Pioneer Settlement of Henry County, Illinois." Unpublished Ph.D. dissertation, University of Nebraska, 1970.

Olsen, Arden B.
"The History of Mormon Mercantile Cooperation in Utah." Unpublished Ph.D. dissertation, University of California,

Ricks, J. E.
"The Early Land System of Utah, 1847-1870." Unpublished M.A. thesis, University of Chicago, 1920.

Manuscripts -- Ph.D. Dissertations and Masters' Theses (Continued)

Rosenvall, Lynn A.
"Mormon Settlement Patterns: 1850-1900." Unpublished Ph.D. dissertation, University of California, Berkeley, 1972.

Schuster, Steven W., IV
"The Evolution of Mormon City Planning and Salt Lake City." Unpublished Master's thesis, University of Utah, 1967.

Smith, Melvin T.
"The Colorado River: Its History in the Lower Canyons Area." Unpublished Ph.D. dissertation, Brigham Young University, 1972.

Spencer, J.
"The Middle Virgin River Valley, Utah: A Study in Culture Growth and Change." Unpublished Ph.D. dissertation, University of California, Berkeley, 1936.

White, C. Langdon
"The Agricultural Geography of Salt Lake Oasis." Journal of the Scientific Laboratories of Dennison University, Vol. 21 (1925-1926), 117-283.

Manuscripts -- Miscellaneous

Bitton, Davis
Bibliographic Guide to Utah Dairies and Autobiographies. Typescript. In preparation for publication. 6 Vols. University of Utah. Salt Lake City, Utah.

"Brigham City Ward History," M.S. L.D.S. Church Archives, Salt Lake City.

"Compilation of Vital Statistics from L.D.S. Conference Report. April, 1965." Membership Statistical File. L.D.S. Church Archives, Salt Lake City.

Deseret News, Oct. 4, 1873, May 3, 1876. Nov. 6, 1857, Oct. 15, 1853.

Journal History, MSS, L.D.S. Church Archives, Salt Lake City.

"Journal History of Brigham Young," MS, L.D.S. Church Archives, Salt Lake City.

"Kaysville Ward History." MS, L.D.S. Church Archives, Salt Lake City.

Knight, Newell
"Aphorisms, Maxims, Proverbs and Pithy Sayings of Governor Brigham Young Culled from Offocial City Records." Salt Lake City, Utah: Salt Lake City Public Library.

Manuscripts -- Miscellaneous (Continued)

Layton, Robert
"Characteristics of Mormon Towns," a paper presented at the autumn meetings of the Great Plains and Rocky Mountain division of the Association of American Geographers, Salt Lake City, Utah, 1970.

"Manuscript Histories of Pioneer Companies." Vol. 1, Introduction. L.D.S. Church Archives, Salt Lake City.

Membership Statistical File. Church Historian's Office. Compilation of Vital Statistics from the L.D.S. April Conference Report. 1965.

"Revised Ordinances and Resolutions of the City Council of Salt Lake City in the Territory of Utah." Salt Lake City: Deseret News Press, 1875.

Snow, LeRoi, ed.
"Biographical Notes on Lorenzo Snow," Typescript, Snow Papers, Box 5 L.D.S. Church Archives, Salt Lake City.

"Springville Ward History." MS. L.D.S. Church Archives, Salt Lake City.

Thornley, Melba
"History of Kaysville." MS Joel Ricks Collection. Utah State Historical Society, Salt Lake City, Utah.

Other Miscellaneous

Barton, Joseph
Map of Kaysville - 1862. Davis County Surveyor - drawn approximately 1872. Courtesy of Alpheus Harvey, early Kaysville resident.

Griffith, William
Private Interview. Brigham City resident, Box Elder County Surveyor for more than 20 years.

Koeppen-Geiger "Klima Der Erde" 1:16,000,000 Justus Perthes Darmstadt Druck: Druck-und Verlags-Gesellschaft mbh Darmstadt.

Morgan, Nicholas G.
"Map of City Wall Around Great Salt Lake City," Salt Lake City, Utah. Date unknown.

Other Miscellaneous (Continued)

Southern Pacific Railroad. "Lake Level Chart of the Great Salt Lake, Measured at the Midland Gauge." Unpublished record maintained by the Southern Pacific Railroad.

Stone, Chauncey
Personal Interview. Resident of Ogden,Utah.
"World Population Data Sheet, 1972," Population Reference Bureau.

Journals, Diaries and Autobiographies

Ballard, Henry, MS, L.D.S. Church Archives, Salt Lake City, Utah.

Blood, William, MS, 1863-1917, L.D.S. Church Archives, Salt Lake City, Utah.

Davis, James L., MS, 1879-1882, L.D.S. Church Archives, Salt Lake City Utah.

Bunker, Edward, MS, approximately 1850-1901, L.D.S. Church Archives, Salt Lake City, Utah.

Call, Anson, Typescript, 1839-1885, possession of Dee K. Call, Ogden, Utah.

Farr, Winslow, MS, 1856-1899, L.D.S. Church Archives, Salt Lake City, Utah.

Fawcett, George, Typescript, 1861-1900, Utah State Historical Society, Salt Lake City, Utah.

Foote, Warren, MS, 1817-1901, L.D.S. Church Archives, Salt Lake City, Utah.

Grover, Joel, MS, 1849-1878, L.D.S. Church Archives, Salt Lake City, Utah.

Hammond, William Wallace, Typescript, 1837-1869, Utah State Historical Society, Salt Lake City, Utah.

Hansen, Peter O., MS, 1849-1875, L.D.S. Church Archives, Salt Lake City, Utah.

Haws, William Wallace, MS, 1835-1894, L.D.S. Church Archives, Salt Lake City, Utah.

Harris, George Henry, Typescript, 1850-1892, L.D.S. Church Archives, Salt Lake City, Utah.

Journals, Diaries and Autobiographies (Continued)

Huntington, Oliver Boardman, MS, 1842-1900, Bancroft Library, Berkeley, original at Huntington Library, California.

Huntsman, Orson W., MS, 1868-1929, L.D.S. Church Archives, Salt Lake City, Utah.

Jarvis, Eleanor C. W., Typescript, 186401923, Utah State Historical Society, Salt Lake City, Utah.

Jefferds, Oren, MS, 1801-1864, L.D.S. Church Archives, Salt Lake City, Utah.

Judd, Zadok Knapp, Typescript, 1827-1892, Utah Historical Society, Salt Lake City, Utah.

Lambert, Charles, MS, 1844-1881, L.D.S. Church Archives, Salt Lake City, Utah.

Laub, George, Typescript, 1844-1877, Utah State Historical Society, Salt Lake City, Utah.

Lyman, Platte de Alton, MS, 1867-1901, L.D.S. Church Archives, Salt Lake City, Utah.

Lyman, Eliza Maria Partridge, MS, 1846-1885, L.D.S. Church Archives, Salt Lake City, Utah.

McIntosh, William, MS, 1857-1898, L.D.S. Church Archives, Salt Lake City, Utah.

Mariger, Lawrence Christian, MS, 1848-1891, L.D.S. Church Archives, Salt Lake City, Utah.

Mayer, George,MS, approximately 1847-1885, L.D.S. Church Archives, Salt Lake City, Utah.

Martin, John, MS, 1828-1915, Utah State Historical Society, Salt Lake City, Utah.

Newton, James Lee, MS, 1853-1869, L.D.S. Church Archives, Salt Lake City, Utah.

Jacob, Norton, MS, 1804-1852, L.D.S. Church Archives, Salt Lake City Utah.

Pitchforth, Samuel, MS, 1857-1861, L.D.S. Church Archives, Salt Lake City, Utah.

Richardson, William, MS, 1820-1886, L.D.S. Church Archives, Salt Lake City, Utah.

Roberts, David Robert, MS, 1854-1920, L.D.S. Church Archives, Salt Lake City, Utah.

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Journals, Diaries and Autobiographies (Continued)

Smith, Azariah, MS, 1846-1912, L.D.S. Church Archives, Salt Lake City, Utah.

Taylor, William, MS, 1869-1874, L.D.S. Church Archives, Salt Lake City, Utah.